

# BUTANE-PROPANE

## News

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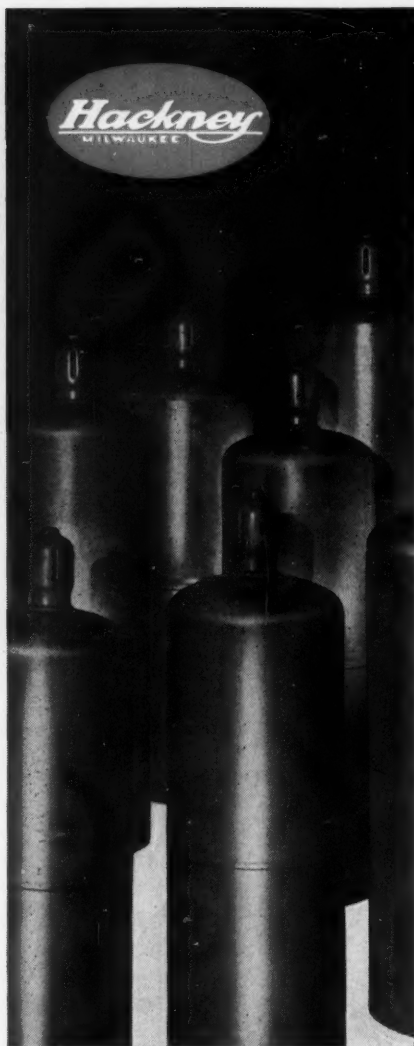
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OCTOBER 1941



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**T**HE LPG Dealer's problems of properly accounting for bulk stocks, of providing delivery service that will strengthen his relations with customers, of accurately and economically establishing a delivery system, can all be solved by the installation of Pittsburgh Meters at both the bulk storage plant and on delivery tank trucks.

In effect, the foregoing is not a new story to us at Pittsburgh Equitable, where for many years we have been devoting our efforts to the solution of problems of a similar nature in the petroleum industry. Pittsburgh Meters have been developed and designed especially for the accurate measurement of liquid butane and propane.

The Pittsburgh Piston Meter is recommended for tank truck deliveries. It can be equipped with various types of registers, including the Master Meter Duplicator, the original delivery ticket printing unit, which provides customers with a certified printed receipt for every transaction.

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# BUTANE-PROPANE

## News

Reg. U. S. Pat. Off.



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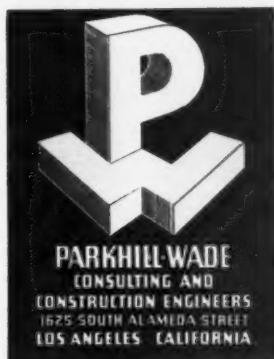
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Built especially for trucks, busses, tractors and delivery cars—Tokheim LPG Pumps are as rugged and efficient as the units they serve! All models are equipped with patented differential controls and positive piston displacement type measuring units which maintain SOLID columns of liquid all the way through the metering chambers—assuring accurate recording and delivery under all conditions. Special "dead man" control guarantees safe operation. Write for bulletin.



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# LETTERS

Gentlemen:

Will an underground tank 2 ft. by 24 ft. make gas as fast as one that is 30 in. or 36 in. in diameter? There seems to be a difference of opinion.

R. H. H.

Oklahoma

The gas vaporizing ability of a tank has a direct relationship to the area of the surface. The long, small diameter tank has more surface area per gallon of capacity and theoretically should transfer more heat from the ground to the tank, as more surface is involved. The successful functioning of an underground system, however, involves more than the shape of the tank, and those firms that make installations that function perfectly for the service for which they are intended, will naturally attain the best results.—Ed.

Gentlemen:

Please tell me if it is plausible to use butane or propane for water heating on a farm in Michigan, and what would be the cost?

L. B. M.

Illinois

Propane, or propane-butane mixtures, are very extensively used in Michigan for all domestic purposes, including water heating, cooking, and refrigeration. While prices vary, this fuel generally costs but little more than natural or manufactured gas.—Ed.

Gentlemen:

We should appreciate your assistance in letting us know: 1. Where we can purchase the adapter tips to change the orifice to LP-Gas. 2. Where we can purchase wire drills from No. 55 to No. 80; also possibly a case for these drills. 3. Where the nearest point to Waynesville (near Asheville) is where we can have underground butane tanks re-examined; also propane aboveground cylinders.

S. F. B.

North Carolina

Wire drills are in very great demand. Inquiry reveals they cannot be purchased in Los Angeles at this time. Whether or not they are on the Government preferred list we are uninformed, but they might as well be, apparently. When available they can usually be

had from the wholesale hardware companies.

Aboveground cylinders come under the jurisdiction of the Interstate Commerce Commission. Inspection of them should be made by properly authorized officials. These may be private companies who conform to I.C.C. standards. The supplier of your fuel should be able to give you information regarding them and possibly the best source would be the Bureau of Explosives, 30 Vesey St., New York City.

Underground butane tanks are usually inspected by the State Boiler Inspector or the State Industrial Accident Commission or Corporation Commission. In different states these official bodies are given different designations. We do not know whether North Carolina has a special statute covering the use of liquefied petroleum gas or not. If there is no law applying, we suggest you communicate with the manufacturers of your tanks.—Ed.

Gentlemen:

Please advise at your earliest convenience if you have a list of the army camps in California using straight butane or butane-air for cooking, water heating and space heating.

E. T.

Washington

In California the following Government camps use either butane or butane-air for domestic purposes: Muroc Bombing Field, Muroc; Camp Haan, Riverside; Camp Roberts, San Miguel; Bicycle Lake, Barstow; Victorville Camp, Victorville.—Ed.

Gentlemen:

We have a bakery customer using butane as fuel for an oven with a 120-leaf capacity who thinks this fuel consumption is excessive. We shall greatly appreciate your advice as to what the consumption of gas should be for such a capacity oven. Our contention is that his equipment is inefficient and unless we can convince him of this with facts he will probably change to some other fuel.

E. R. B.

Texas

According to the records of some of the larger gas companies, it requires from 400 to

610 B.t.u.'s per lb. of bread for baking with gas, and the difference is due to the different types of bread and flours. It would probably be safer to use the higher figure, for only in new, modern bakeries would the low figure prevail. This means that it would require 61,000 B.t.u.'s to bake 100 lbs. of bread, and 61,000 B.t.u.'s would be equivalent to 2.9 lbs. of butane. In terms of gallons of butane, there would be required approximately 6/10s of 1 gal., as there are approximately 103,000 B.t.u.'s in a gallon of butane. It has been suggested that in looking for causes of excessive fuel consumption, you check for excessive draft on the oven, and if such exists, to use a draft hood in the flue connection. Oven insulation should be two inches thick to prevent radiation losses. It is also vital that baking schedules be so arranged as to bake high temperature products first, and following with the low temperature products. The oven should always be well loaded to economize on fuel.—Ed.

Gentlemen:

We have a customer who wishes to purchase a butane gas-fired furnace to be operated with a 32-volt direct current. We understand that this is to be a forced air central heating plant and we are having trouble in locating a concern that will make this to operate off of a 32-volt plant. Can you help us?

Nebraska

E. H.

This is a question that may properly be referred to control manufacturers, rather than to those who make furnaces.

We have talked with the southern California office of General Controls and have been informed that by using a 32-volt, direct current value, made by that company, you will be able to take power off your 32-volt line.

It is also true that with the newly developed automatic gas actuated control, in which the necessary operating current is supplied by the pilot generator, and made by the same company, you do not need to tie into any electric current.—Ed.

Gentlemen:

Enclosed please find our check covering a three-year subscription to the BUTANE-PROPANE News.

I am just entering the butane business. It is an entirely new field to me. I am anxious to learn as much as possible about butane in order that I can sell properly.

I have a copy of the Handbook of Butane-Propane Gases but I also want something more elementary.

I saw a copy of the August BUTANE-PROPANE News which has in it the second installment

of the "Bottled Gas Manual." I think this manual would be a great help to me and I would like for my subscription to begin with the July issue if possible.

A. M. D.

Tennessee

You are certain to find many articles in BUTANE-PROPANE News which will be helpful to you in starting into this industry. During a given year you will find articles which cover every phase of activity, including selling, servicing and installation. You will also find many semi-technical articles which may be referred to when difficult problems arrive.—Ed.

Gentlemen:

I have recently purchased a house trailer equipped with bottled gas for cooking. A dealer told me that if I would write you, you would give me a list of stations in the U. S. where I can have my bottles exchanged or filled. Will you?

H. R. M.

Utah

We are sorry to say that there are no copies available of the Directory of Automotive Filling Stations, which we published last year. The demand for them has long since exhausted our supply.

Many stations have been established since the printing of that directory. There are many places in the West and Southwest where butane may be obtained at filling stations, but when you fail to find it in given towns, make inquiry for a dealer in liquefied petroleum gases who serves the domestic field locally. In most instances he will be able to supply your needs.—Ed.

Gentlemen:

I would like to have information concerning a company that handles propane carburetion for automobiles.

G. V.

New York

Nearly all of the companies in the United States which feature changeover equipment for trucks and automobiles are advertisers in BUTANE-PROPANE News. If you will review a copy of this publication you will find their addresses.—Ed.

● BUTANE-PROPANE News welcomes letters from our readers, but it must be understood that this magazine does not necessarily concur in opinions expressed.—Editor.

6,330,118

WOMEN

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advertisement



# HOW WILCOLATOR ADVERTISING CAN HELP YOUR SALES

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## How to Tie-in... FREE!

Here's the greatest advertising opportunity ever offered to dealers selling Wilcolator equipped ranges. All these 4 "sales makers" are yours absolutely FREE. Write today.

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THE WILCOLATOR CO., ELIZABETH, N. J.

## LATER.. AT YOUR STORE



OCTOBER-1941



**C. L. PARKHILL**  
**Guest Editor for October**



# *Is This the Time to Retreat?*

By C. L. PARKHILL

Vice President, Parkhill-Wade, Los Angeles, Calif.

**I** CANNOT passively accept the promise that this is the time for curtailment in the LP-Gas industry, because I hold the LP-Gas industry is vital to National Defense, and, when the holocaust is over, to world reconstruction!

There must be a vastly accelerated production of bombers and tanks, of ships and shells. These are the instruments of war. They are vital to victory. But, by themselves, they cannot assure success. Their vitality stems from the will of men to win, without which they are useless.

Over a century ago Napoleon said, "An army marches on its stomach." Hitler in his attack on Russia, which risks all victories won on the possibility of a victory which will win food for his armies in the field and his workers behind the lines, reiterates that military truth today. It is food that gives men strength to fight and work, and strength gives them will. Thus, it is true that those things which make for the production of food are as important as those things which make for the production of the instruments of war!

LP-Gas essentially is a farm fuel. In farm home use it is the most convenient, economical, labor-saving, man-hour-saving means of cooking, water and space heating and refrigeration, and preservation of farm morale is as important as preservation of morale on battlefields. As fuel for tractors and other farm equipment, it replaces gasoline badly needed in military and other uses. As fuel for trucks hauling produce to point of distribution it gains the same advantage. In both instances it conserves lubricating oil, reduces maintenance necessity and costs, lengthening the life of equipment, forestalling the necessity for replacement for the greatest period of time.

I believe the LP-Gas industry should immediately prepare a survey expressed in terms of this industry's importance to National Defense for presentation in Washington. The production of a domestic cylinder requires steel but if it preserves farm morale, that steel has been well used. The manufacture of a truck or tractor fuel tank requires steel but, if those few pounds of steel defer the necessity for the purchase of a new truck or tractor, saving the tons of steel required for their manufacture, that steel has been well diverted. This is the language understood in Washington today!

# Safety Standards Set ... and met

## ANOTHER ADVANTAGE OF LP-GAS METERING

● Practical instruments for safely metering all kinds of butane-propane vapors are fortunately available . . . AMERICAN Tinned Steelcase and METRIC-AMERICAN Ironcase meters of special construction, together with special indexes, were ready as fast as every new market requirement for LP-Gas arose.

American Meter Company instruments meet the strictest accuracy, performance and safety requirements. The millions in service afford assurance of customer confidence.



An Authoritative Guide . . . The exceptional demand for our new Bulletin LPG-4 is due largely to the guidance it offers in proper selection of the correct types of LP-Gas meters. Copies still may be had upon request.



GENERAL OFFICES • 60 EAST 42ND STREET, NEW YORK, N. Y.

**AMERICAN**  
**METER COMPANY**  
INCORPORATED (ESTABLISHED 1934)

# MAINLY BEYOND THE MAINS

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AS THE SHORTAGE IN supplies, materials and equipment becomes more acute, dealers and distributors of LP-Gas are up against the necessity of serious consideration of their plans for the immediate future. While the opinions of the heavy duty prophets within the industry are not all in agreement on the subject, it is becoming increasingly apparent that the lush days of phenomenal expansion may be due for a curtailment that will not end until the present emergency is over.

With increasing severity, and with increasing disregard for the welfare of any industry whose product is not an outright military essential, the government is restricting the flow of supplies and materials that normally make consumer goods.

Such a restriction is inevitable, once the major premise of the necessity for war has been accepted, and for the next few months at least we may expect to see the situation aggravated instead of improved. The problem that confronts the rank and file of butane and propane dealers and distributors is how to make the best of existing conditions, planning a course that will insure their individual survival and at the same time leave them in a favorable position to resume their progress,

once the needed equipment is again made available to them.

It is current knowledge that a great many, if not indeed the majority, of local LP-Gas operations are under-capitalized. Growth has been so rapid that every available dollar has gone into plant expansions, new equipment and new installations. With the profound skepticism that inspires its dubious aid to new industry, the banking fraternity has been notoriously gun-shy whenever accommodation to LP-Gas operators was under consideration. In many instances, manufacturers of equipment, through the extensions of credit, have been acting not only as purveyors of materials, but as bankers as well. Losses have been extremely small, since in the main, character and ability have been important factors in determining the amount of credit that any individual operator would be allowed. The service to the industry that the manufacturers of cylinders and valves and fittings and meters have thus rendered will be remembered with profound appreciation by hundreds of dealers who admit in all honesty that the financial accommodation thus supplied was a great factor in establishing their enterprises.

If, then, as now appears in-

evitable, the rush of expansion is to subside, the re-sale side of the industry will for the first time have an opportunity to relieve the manufacturers of the banking load that they have been carrying, at the same time rebuilding its own reserve of working capital against the day when more normal conditions are allowed to return.

The elimination of unprofitable customers from the books is another item of unfinished business that the industry has long neglected. In the first flush of enthusiasm anyone who wanted gas was regarded as a good account. Summer cabins that tie up equipment and use perhaps a hundred pounds of gas a year are an example. Customers who make unreasonable and profit-shattering service demands, for which they insist on paying nothing, are in the same category. Slow-paying consumers that are constant candidates for the Reserve for Bad Accounts entry on the ledger, still persist. All of these can and should be handled, not in the light of desperate attempts to add to the load, but in a realistic evaluation of their net worth as profit or loss items on the annual statement.

We do not counsel wholesale discontinuance of service, nor would we recommend a ruthless disregard for public relations in the elimination of unprofitable business. But with good accounts waiting to be served, and with a shortage of

the equipment necessary to take care of their wants, it simply doesn't make sense to leave the badly needed materials tied up in services that do not pay their way, or with customers who will not pay their bills.

With more requests for service than he has equipment to serve, the price cutter may well be advised to put his business on a profitable basis.

We have yet to visit a bulk plant or shop where used equipment was not kicking around, taking up valuable space, adding to inventory, and serving no purpose either useful or ornamental. Much of this type of material has many years of good service left in it. All it needs is to be cleaned up, repaired perhaps, tested and put back into service. Millions of Americans are going to have to get one or two or even more years of service out of their automobiles. It is just as essential that every type of equipment be used for the maximum working life that was built into it by the manufacturer.

Cylinder turnover can be materially increased, and the number of cylinders per customer reduced. Many operators are already accomplishing this by swinging over to single cylinder, metered operations. But without making this drastic change, a simple visible inventory of cylinders, their location and the dates on which they were delivered, may be expected to reduce the cylinder inventory by

at least one-half cylinder per customer served, provided it is followed up, and idle cylinders immediately collected.

Many of the measures suggested are in themselves small economies, but in the aggregate they can mean the difference between continued, even though modest, expansion, and abrupt cessation of growth of the LP-Gas industry during the present impasse in materials and equipment.

There now seems reason to believe that Washington is coming to recognize that the wholesale slaughter of non-defense industries leaves precious little for those who depend on these industries to defend. When this lesson has been thoroughly learned by the politicians, it is reasonable to assume a more rational attitude on the allotment of raw materials will be taken, and that the health and well-being and the right of survival of the civilian population will be given more understanding and consideration.

When this day dawns we have no misgiving that the star of LP-Gas will still be in the ascendency. But if, in the meantime, the industry as a whole has undertaken a thorough economic housecleaning, the current experience will have yielded benefits far beyond the vision of those who now would succumb to pessimism or despair.

**A** TIDY LITTLE TITBIT OF misinformation entitled "Disadvantages of Bottled Gas" has just crawled out from under the office rug, and we find from its table of contents that "Mrs. Bottled Gas User has learned that she may be out of gas when she needs it most . . . . It costs her 56% more to cook with bottled gas . . . . Kitchen headaches and afternoon fatigue are frequently caused by bottled gas . . . . Government warns Mrs. Housewife she can expect a dirty stove, grease and grime with gas!"

The industry has gone beyond the stage where it is necessary to categorically deny every misstatement and every half-truth that is circulated about it via the underground route; and the document in question is so patently a product of electrical panic that to even display it to a prospect would damage the electric cookery salesman's cause. And he cannot very well afford to have that happen.

The booklet is anonymous, as might be expected of any product of the poisoned pen. But inadvertently the pay-off is disclosed on Page 14; "Here are a few simple steps every Westinghouse electric range salesman can take to more successfully handle bottled gas competition."

Westinghouse! An easy name to remember.

*More Than 4000 Copies This Issue*

# 1000 "Ben Tillman" Families Find LP-Gas a Luxury

**J**UST outside the gates of the Navy Yard in Charleston, S. C., one of the most beautiful of all the government housing projects—the Ben Tillman Development—is rapidly absorbing its quota of 1000 defense workers and their families. The wine-red brick buildings melt softly with the pines and centuries-old liveoaks. The tile-roofed, one-storied units follow the slope of a hill which fronts the majestic Cooper River with fabled Fort Sumter in the distance. A picturesque ravine extends through the tract, dividing the buildings into homely little clusters with no trace of regimentation or stiffness.

## Makes Record in Short Time

Credit goes to Coastal Butane Gas Corp. of Summerville, S. C., of which F. P. Prettyman is president and J. R. Herrin, Jr., vice-president. In operation only slightly more than a year, Coastal Butane has made a remarkable record in a territory of small towns and far from prosperous rural districts. Aside from the Tillman project, the company has marketed upwards of 250 domestic installations, plus a number of important commercial jobs. These last include several restaurants and two large hotels.

"Selling the government on butane gas," chuckled Mr. Herrin, "was no simple matter of naming

By GLENN ALLAN

a price and walking away with a contract. When we first broached the subject to F.H.A. authorities in Washington, we practically had to send for a dictionary to prove that there was such a word as 'butane'. The phrase 'liquid gas' was dismissed as paradoxical; obviously a slip of the tongue."

## Had All the Answers

Tireless in their purpose, Mr. Prettyman and his associates kept on knocking at doors and wearing out their trousers in outer offices. Washington to Summerville to Charleston—finally, they got a hearing. What about this "liquid gas"? Coastal Butane had all the answers.

Here was one of the country's finest developments approved to the last brass screw—except for the fuel supply. Coal would never do because there were to be no cellars in the project, no facilities for storing coal. Not to speak of the dirt, the extra labor costs and the downright inconvenience. Electricity in this area of sudden storms and tree-lined highways was not entirely dependable. Oil? Well, across the road from the Tillman site is another development, an older one, which utilizes oil. A wave of the hand indicated





The pine-shaded streets and homes of the Ben Tillman project, Charleston, S. C., that form living quarters for Government workers.

the row after row of unsightly drums, cocked up on stilts outside each kitchen window. That sort of thing might do for temporary, wooden houses but the Tillman development is planned as a permanent part of the Navy Yard area.

On top of these arguments were piled others. Mention was made of the safety, the dependability, the cleanliness of liquefied petroleum gas. The government officials showed a trace of interest. Dependable? Now, that was a point; national defense couldn't wait for a worker to boil his coffee over a candle simply because a tree had crashed the wires. Clean? Some projects had to redecorate each year because of smoke-discolored walls.

As for safety, all the pipelines would be two feet under the surface, well below the frost level for the section. The blanket of earth would keep the temperature constant. Valves would permit any section of the development to be cut off from the tank.

"What tank?" shouted the officials in a breath. "Do you expect to service 1000 families from one tank? Suppose an accident occurred? Suppose a saboteur—?"

The men of Coastal Butane figured the answer to that, too. They slid their blueprints out of the way and started drawing sketches that were afterwards converted into still other blueprints.

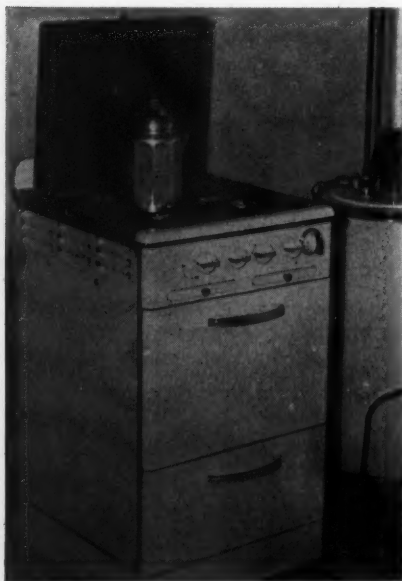
"What a job!" recalls Mr. Prettyman. "We actually had to write up all the specifications; for we were a jump ahead of the engineering department where plans and specifications were drawn up."

How faithfully they performed their task is best attested by the eventual approval of their second proposal whereby butane gas was extended to 600 additional units, known as the George Legare Homes. The gas storage tanks are from 1000-1200-gal. capacity and serve not more than 12 housing units each. Moreover, they are inter-connected within their blocks so that failure or exhaustion of a

tank or of several tanks will not hamper the flow of fuel.

What does the consumer think of butane gas?

Mrs. Knud Larsen, of "19-A," is that fine type of American homemaker who can get her man's breakfast, pack his lunch box, hustle the kids off to play and flute the ruffles of her best curtains without losing a flicker of her good humor. She was engaged in her morning routine when we called and, beyond a mild reproach that it was too early to expect her home to be "really clean," she was glad to see us. Or seemed to be. She was certainly glad to show us her butane cook-stove, her butane water heater, her butane space heater.



Typical installation of butane range and water heater in the Ben Tillman home development.

"The best I ever used," she said cheerfully. "Good, quick heat the minute you want it. Hot water all the time and the space heater keeps the apartment snug and the family in good health."

#### Likes Butane Best of All

Mr. Larsen is a sheet metal worker and his wife has followed him all over the country. She has cooked with every material even suspected of having combustion energy and she forswore them all in favor of butane. No odor, no fumes, no greasy drip and uninterrupted service. She likes Charleston, she likes the fact that Mr. Larsen's work is a short walk away and that the development has made ample provision for children's play needs. But her kingdom is the kitchen.

"Hardwood floors," she pointed out proudly. "Built-in sink, the finest sort of cupboards, refrigeration, plenty of floor plugs. Everything arranged so you hardly have to stir from your tracks to get a meal together."

Mrs. Larsen filled the coffeepot, set it on the stove and turned the burner valve. From the pilot spurted a bright needle and the ring of blue flame purred into life. Mrs. Larsen went back to her ironing. She said nothing; only chuckled.

Between award of the contract and Mrs. Larsen's coffee is a short jump in time—from November to June—but a considerable amount of jumping went on in Coastal Butane's offices and over the road to the project, 17 miles away. Trans-

er of dots on a blueprint into tanks and pipelines was a matter of painstaking labor and those entrusted to this work were forced to exert immeasurable ingenuity as each fresh obstacle was encountered and mastered.

To begin with, all roads had been built and surfaced by the time the fuel contract was finally awarded. Sewer and water mains were in place and many of the houses were practically completed. It was forbidden to cross the roadways and this called for a final revision in plans with the ultimate adoption of the block system mentioned above. All tanks and service lines are contained within the area bounded by the adjacent roads. But this was easy compared to the task of threading consumer lines through the maze of water and sewer mains and other obstructions.

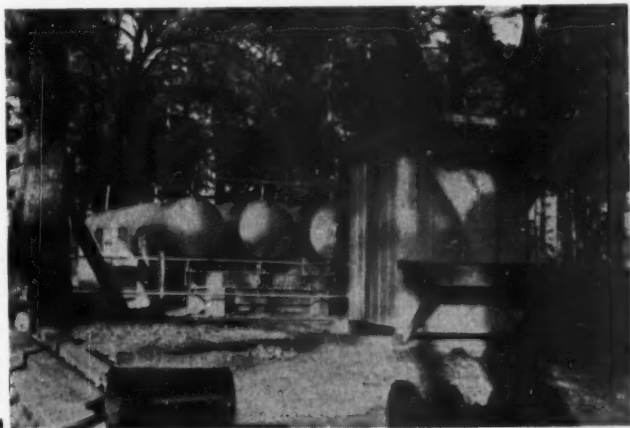
Again, each row of houses had a garbage station at the street end, a low-walled platform of concrete which effectively barred entrance to alleys. The Coastal Bu-

tane tanks had to be inched into place and buried directly behind these stations. They are replenished by means of an extra-long hose from a truck at the curb.

One important difficulty was the design of the houses, as the architects had never anticipated so radical a change in policy as the use of butane for fuel. Real ingenuity was required to fit the connections and appliances into spaces palpably intended for quite another sort of fuel. But this was done, and well done. The installation equipment supplied the tenants of Tillman Development is equal to that of a first class residential hotel.

The 107 tanks scattered over the 100-acre tract are refilled from the Coastal Butane's storage plant at Summerville. Even when all the units are completed and occupied, it is expected that a single 1000-gal. truck on full time will be able to provide the essential service, averaging four round trips daily. However, other trucks in the company's fleet will be available for

▼  
The storage plant,  
unloading pipes  
and pump house  
of the Coastal  
Butane Gas Corp.,  
Summerville, S.C.  
▼



emergencies or if the fuel consumption passes expectations.

Tank pressure in the installations hovers around 50 lbs. and is equalized over the multiple system within each block. Consumer-lines are equipped with a curb box containing regulator valves, meters and cut-off valves. Any block not in use can be taken out of service and tanks may be removed for repair without interruption in the flow of fuel.

The fuel used is supplied by the Sinclair Prairie Oil Co., Tulsa, Okla., and the tanks were manufactured by the National Butane Gas Co., Memphis, Tenn.

Coastal Butane adopted a special method for handling the heavy tanks at its storage plant. When the first carload of tanks arrived, Mr. Prettyman recalls, day's end found an exhausted crew of workers and a single container removed from the gondola. They emptied that car by "sweat and ignorance" but before the next arrived Mr. Prettyman, who had many years experience as a lumberman, had called into play his knowledge of logging operations.

On each side of his spur track he erected an A-tower of heavy timbers surmounted by a steel I-beam. From this he hung a travelling hoist with hook and chains. A series of blocks complete the layout. Two men can hoist the heaviest tank, slide it to the end of the beam and lower it to the ground. Here, a logging cart is set a-straddle the tank; the cart is tilted, and a tiny tractor trundles it to its place.

Back to the Tillman development

and a word on the cost of butane fuel. This time to the other end of the project and a visit to the first tenant to occupy a unit, Mrs. Winston Churchill—that's right—of Dallas, Texas. Mr. Churchill is a structural steel worker and his family, too, has followed the payroll all over the country.

### The "Landlord" is Liberal

The Churchills aren't, to their knowledge, related to Britain's great man, although they admire him very much. They have four children, including twin babies, and occupy a four-room unit which includes living-dining room, kitchen with breakfast alcove, and two bedrooms. Their "landlord" provides cookstove, water heater and space heater with butane service, refrigeration, sink and work table. The bedrooms have closets, there is a broom closet, and copper screens cover all the windows. For these accommodations, the Churchills pay approximately \$31 monthly, including fuel, lights, refrigeration, water and sewerage.

"There is no complaint from me," Mrs. Churchill said warmly. "Of course there is a maximum to the fuel we are allowed but it is more than generous and we don't run over."

The average consumption of butane gas at those units now occupied runs about \$2.35 monthly. The buildings already completed contain two and four room apartments but some of those under construction will run to six rooms. All of these have long been reserved and there is a waiting list, especially for the larger units.

# One Dealer's Viewpoints On LP-Gas Company Economics

By VICTOR T. MAVITY

**M**OST of the LP-Gas concerns have certain similarities to the city gas companies which are classed as public utilities. One point to consider is the investment required to render the service. LP-Gas service has the important advantage that all of its investment may be actively in service during its full useful life.

When a city is piped for gas service the mains are laid up one street and down the other; capacity is there for vacant lots, and for buildings of non-consumers, as well as for the actual consumers who may use gas right away or who may wait any number of years. Here is perhaps the secret of the biggest inherent advantage of LP-Gas over piped gas, that is, *we, in this business, can keep our outside investment practically 100% active during its useful life.* When a customer moves, we just move the service equipment too.

Another advantage which we enjoy, pertains to the matter of peak load demand. Service to one customer does not suffer because of his neighbors' demands. If his load increases beyond the capacity of his container, we just add more containers or exchange for a larger one. There is no problem of building plant capacity to meet an *esti-*

• Mr. Mavity's accompanying discussion of capital investment, fixed charges, retirement reserve, depreciation, etc., are prompted by personal experiences, and his comparisons between LP-Gas companies and piped gas utilities are based upon figures obtained from operations of manufactured gas concerns. While some of his arguments apply to all utility operations, others would not necessarily be applicable to town plants serving natural or liquefied petroleum gases, in which increased load demands can be met with nominal additional investments. What do our readers think of the problems presented in this article?—Editor.



V. T. MAVITY

*mated* future load peak, as gas utility companies frequently have to do. This estimating of plant capacity can be rather costly. If there is surplus capacity so great that it isn't all used for a period of years then there is an accrual of fixed charges which are absolutely unproductive. If the plant is underbuilt, then service suffers to many consumers and there is consumer ill-will to contend with as well as increased cost of piece-meal construction.

So, the gas utility plant finds it a practical necessity to have unused excess capacity. It is necessary, also, to have some reserve capacity

in the LP-Gas business. But, in our case, all needed are a few installations to take care of new customers without making them wait, and to provide for increasing demands of existing customers. The investment required for this is comparatively small.

#### **Fixed Capital and Annual Sales**

The net of all the differences between piped gas and LP-Gas systems is that the ratio of fixed capital investment to annual gas sales is more than three times as great for the piped gas company. Or to express it another way we might say the investment of the piped gas company is more than three times as much per average customer as for the LP-Gas company. This gives a big advantage to the latter. However, this advantage is more than offset by the greater costs inherent in the delivery of LP-Gas all the way from point of production to the ultimate consumer. The advantage is further offset by the need for more rapid accruals to the retirement reserve in the comparatively new industry.

Let's look at this "retirement" reserve in a little more detail. "Retirement expense" is often loosely called "depreciation," but there is a difference. By depreciation we mean the gradual wearing out or rusting away of equipment.

Many accountants deduct depreciation reserves from capital accounts to show true capital value. When it comes to use of capital value as a basis for rates for service, that is wrong because equipment doesn't "depreciate" from year to year as far as its service

function is concerned. For example, a piece of pipe continues to render just as good service the second year as it does the first, and just as good the tenth year as it did when new, but on the very day that it is finally removed from service, its value, as far as earning capacity goes, drops to zero. On that day there must be money accumulated over the years ready to pay for a new pipe to replace the old one. Or, consider a regulator, used only a couple of years, taken out of service because it is replaced with a later and better one. The old one didn't "depreciate" at all (as far as earning power goes) nor it didn't become obsolete gradually; it became obsolete all of a sudden when a better regulator was available in a rapidly growing industry, and on the day it was taken out of service its earning ceased, its useful life was over, and there should have been money accumulated in the "Retirement Reserve" to buy the new and better regulator.

#### **Looking Ahead in the Industry**

As a practical matter the retirement reserve may be built up in a satisfactory manner by setting up a "depreciation" schedule that is acceptable to Uncle Sam's income tax men. If and when our industry ever comes under commission regulation of its rates and service, we will fare better if we remember that it is really a "retirement" reserve, and set up balance sheets showing true cost on the asset side with no "depreciation" deductions at all, and with the full retirement reserve listed with the liabilities. The reason for this is, as stated



above, that earning capacity of equipment does not diminish with its age, but does drop to zero on the day of its removal from service.

In regard to cost of financing—the piped gas companies, operating under franchise, with the prestige of full public utility status and with, in the public mind at least, long records of successful operation, have a tremendous advantage. Just count the LP-Gas concerns that have been financed independently of the mother oil companies. Look at their size and financial rating, and decide that for LP-Gas securities there has been no market available, except for local investors who have confidence in their home town business man, himself, rather than in his scheme to sell gas by the bucket-ful.

#### Notes on Interest

Except for the oil company sponsored operators the LP-Gas concern must expect to revolve in a pretty small orbit until the industry shows that it can earn a fair return over a period of years on invested capital, after ample provision for both immediate and ultimate costs. There are a lot of "ultimate" costs in this business that need to be kept in mind, and therefore, it is my recommendation to the unsponsored concerns in the LP-Gas industry that they begin now to help create a record, which the investing public will view with favor. Rates for service that yield all costs plus a fair and reasonable return on capital invested is the first requisite.

In listing costs there is confusion in some minds in regard to interest

on borrowed money. In my estimation, interest on borrowed money is not a legitimate item of fixed charges where such charges are used as a basis for rates. Interest accruing during construction and before operations begin is a proper part of fixed capital investment. But interest after operations begin is an item to be paid out of the "fair and reasonable return" that I mention so much. In other words, the customer shouldn't be penalized because his gas company had to borrow some of the money required to serve him. The gas company, therefore, must pay less for its financing than it earns with the money.

Everything considered, it seems to me that the LP-Gas company can develop into just as sound and substantial a business as its older brother, the piped gas company. Our greatest handicaps are: The delivered cost of the gas itself; need for larger retirement reserves, and almost prohibitive cost of financing. But our greatest advantages are less than a third of the investment per customer and practically 100% flexibility of service. These are so important that LP-Gas service is flourishing at higher rates in areas only a stone's throw from pipe line gas.



#### Sansom Furniture Co. Has New LP-Gas Sales Manager

Bill Lee, formerly of Chilicothe, Texas, has assumed the duties of sales manager in the butane system department of the Sansom Furniture Co., Quanah, Texas, according to an announcement made recently by Roy B. Sansom, manager of the company.



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# Builds Dealer Tank Reserve

**F**OR the protection of its dealers throughout the state, the Oklahoma Automatic Gas Co., Oklahoma City, Okla., is now stocking hundreds of fabricated tanks on a vacant lot adjoining its office building at 16 West California St., according to C. Ralph Jones and Lewis Hughes, owners of the firm.

The company plans to have a reserve stock of at least 500 tanks on this lot at all times, providing deliveries can be had. Early in August the tanks were being received in carload lots at the rate of one carload a day. "We hope by this means to protect our dealers against any serious shortage of LP-Gas systems due to the war situation or other causes," Mr. Jones explained.

The Oklahoma Automatic Gas Co. maintains a mechanical department in its Oklahoma City headquarters where it puts the finishing touches on the fabricated LP-Gas tanks which it purchases. These, in an unfinished condition, are hauled in trucks to the company's shop, and there assembled.

The tanks are given a third coat of asphaltum paint and are burlapped. The burlap is held in place by special strapping. Fittings are then installed, using a special butane fitting lubricant. A special

fitting is then added which extends to the bottom of the tank.

Any water that may be in the tank is blown out by air pressure. After all fittings are installed the system is pumped to 80 lbs. of air pressure and checked by use of soap suds for the most minute leak.

The regulator, pigtail, copper expansion joint and hood are installed, the system is stenciled and tagged, and it is then ready for the customer.

An adjoining one-story building was acquired to be used for storage of LP-Gas appliances and equipment. This room is stacked high with new, crated LP-Gas stoves, water heaters and other appliances. It also is used as a store and display room for used appliances.

The firm found it necessary to acquire the additional floor space to take care of increased sales by its 60 active local dealers located through the state. The company has sold and installed more than 100 complete butane jobs each month during the past six months, according to Mr. Jones.

The Oklahoma Automatic Gas Co. maintains in service seven trucks for the delivery of LP-Gas and the installation and servicing of LP-Gas equipment and appliances. Although primarily a distributing firm operating through local dealers, the company installs 75% of its equipment.

**OPPOSITE PAGE:** The tank yard of Oklahoma Automatic Gas Co.

# Utility Sells Beyond Mains Then Changes Over Town Plant

By CHAS. G. GRAU

General Manager, Oneida Gas Co., Rhinelander, Wis.

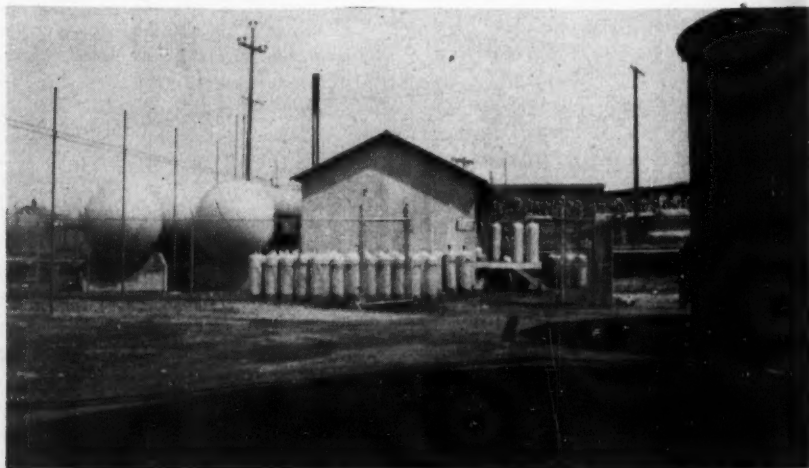
**H**OW often have you heard the expression "it can't be done," when you suggested some unorthodox plan for improving your gas service or felt that the plan you had in mind would bring in additional revenue for your Company?

The Oneida Gas Co. is an utility supplying gas in the mains for the City of Rhinelander, Wis. and when it first was reported that we were going into the bottled gas business for use in the city beyond our mains, the general feeling among the other gas utilities in the state was that we needed a guardian as

such a thing simply wasn't being done.

For many years our policies have included free service in the city, free appliance installation, a rental purchase plan for gas automatic water heating, a 10-year guarantee on gas ranges, and unconditional guarantee on Servel Electrolux refrigerators.

Neighboring utilities said, "It can't be done," but the results obtained have proven otherwise. Our rental purchase plan of selling gas automatic water heaters has been a success and we are rather proud



The bulk plant of the Oneida Gas Co., Rhinelander, Wis.

of our record of having the largest saturation of automatic heaters on our gas lines of any city in the state, in proportion to meters in service.

Our 10-year guarantee on gas ranges gave us a talking point that no other company selling cooking appliances had ever used. With this kind of a guarantee, our customers knew that a gas range would have no upkeep cost for a long period of time and also gave the customer the feeling that the gas range must be a pretty good article or we wouldn't dare give such a long time guarantee. The same thing held true with our unconditional guarantee on Servel refrigerators—the customer is sold on the idea that they have bought absolutely the best refrigerator on the market—which is true—and what few repairs have been necessary in our 10 years' experience have proven that the small expense to us for repair parts is far overshadowed by the publicity our guarantee has given our company.

Then, when we, an utility, decided to sell bottled gas, again it was said, "it can't be done," but our success has proven it can, even though there are many competitive dealers in the field.

Our original plan was to make bottled gas installations within the city limits beyond the mains, but requests began coming in for installations beyond the city limits. At first we were rather reluctant about making these installations but decided to give it a trial, with the idea of limiting these installations to within a few miles of the city.

In spite of the fact that we tried

to do this, we began to spread out and the volume and financial return were most gratifying.

Our business increased so rapidly that in 1939 it became necessary to install our own bulk plant, at which time we also established a few sub-dealers.

### **Business Jumped 233%**

Our bottled gas business increased 130% in 1939 over 1938, and our 1940 business was a 233% increase over 1939. For the first seven months of 1941 our increase has been 66% over 1940. In less than four years we have made over 800 installations—in spite of the fact we were told, "it can't be done."

We were so pleased with the operation of our propane gas and the minimum number of service calls that last year we changed over from carbureted water gas for use in the mains to butane-air gas, and after we get a few pressure problems straightened out we feel that we will have the most ideal gas set-up in the state.

It is interesting to note that some of the utilities that questioned our plans, have gone into the bottled gas business for installations within city limits beyond the mains and have proven to themselves that, "it can be done."

Not only has our bottled gas and city gas business grown but we have shown a very healthy increase in merchandise and appliance sales, and if anyone is interested in buying a little red ink we have some for sale as now we use nothing but black, even if we were warned, "it can't be done!"



## PEOPLE IN THE INDUSTRY

TOP (left): L. J. White, vice president of Southern Steel Co., (right) giving instructions to advertising agency head, Claude B. Aniol, about BUTANE-PROPANE News advertising. CENTER (left): W. W. Banks, Dallas Tank & Welding Co., Inc.; G. A. Swann, Ballinger, Texas, and Thurman Cole, Brownwood, Texas. BOTTOM (left): Quentin Jones, Houma, La., (left), and Ralph G. Abbott, Ensign Carburetor Co. TOP (right): A. J. Bommer, engineer of Underwriters' Laboratories, Dallas. CENTER (right): Miss Lela Tounsgate, of Texas Railroad Commission.



# Home-Building and Selling Gas Make Profitable Combination

THE association of a large Florida home-building company and an operator of five propane plants in Northern states has resulted in the organization in Miami, Fla., of the Public Gas Co., with headquarters at 7200 N.W. 7th Ave.

This company was formed in the latter part of 1940 with Dan B. Ruskin, president; Max Orovitz, treasurer; and Sid Langer, secretary.

Mr. Ruskin and Mr. Orovitz are at present the heads of the Scott-Perry Corp., one of the largest builders of private homes and apartment houses in Miami and Miami Beach, this corporation having constructed more than 1000 homes during the last five years in the greater Miami area. Mr.

Langer is interested in the General Natural Gas Corp., of Woodridge, N. Y., one of the important retailers and wholesalers of bottled propane gas throughout the states of New York, Pennsylvania, and New Jersey. The sales force is headed by B. Allen Porter and the office force by C. G. Chester, comptroller.

LP-Gas has already been installed in many of the 1000 homes mentioned and will be made the standard fuel for all future constructions. Hotels and apartments built or to be built on the beach by the same company will also use butane for fuel.

Construction of the Public Gas plant was started during the month of September, 1940, and finished the first week of November; actual



Personnel, bulk plant and filling station of Public Gas Co., Miami, Fla.

business was started about Nov. 15.

The company is using a metered system for all its consumers. The accompanying picture shows the plant and main office but in addition to that, there is another branch office located at 103 W. Flagler St.

The largest consumers are serviced by tank truck delivery; the

smaller consumers by three delivery trucks, two of which take care of installation and service work, the other one being used exclusively for the exchange of cylinders at the consumers home.

Propane for all consumers is supplied from the Norco, La., plant of the Shell Oil Co., Inc.

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## *The City Suburb---*

### *A Good Place to Sell*

By BERT MERRILL

**"T**HE quickest means of building up interest in bottled gas and the modern conveniences which attend it for the home is to talk about it as often, and as much as possible." That simple statement outlines the basic theme by which Gene Blackstone, head of the Blackstone Rural Gas Co., of Indianapolis, Ind., has been able to increase the number of customers using his bottled gas products by 100% in the short space of two years.

Mr. Blackstone opened his business in Indianapolis' populous northern suburb of College Grove three years ago, locating in a well established electrical appliance distributor's building where tools and equipment for appliance maintenance were already at hand.

Since 1939 from this store, at 5876 College Ave., he has been specializing in the sales of Pyrofax bottled gas for the use of subur-

banites and rural dwellers located off the city gas mains. His users extend as far as 35 miles outside the Indiana metropolis, and in some cases, are "self-service" buyers who come to the store with their own automobiles and trucks to replenish their supply.

Although the use of bottled liquefied petroleum gases is comparatively new to Indianapolis—perhaps more so than in many other eastern cities—Mr. Blackstone has been continually playing it up in a dozen forms of advertising, by visiting contractors, architects and small home promoters and in dozens of other potential markets. He believes that a greater field for sale of bottled gas and appliances exists in the fringes of larger cities than is to be found in rural areas; therefore, he has spent the majority of his time in promoting bottled gas in the suburbs.

"It has been my experience that

the average suburban home-owner wearily resigns himself to the necessity of wiring his home specially for an electric range, or unwillingly accepts oil-burning or kerosene cooking," Mr. Blackstone points out. "But when we can suggest that the simple changeover of burners on his former gas stove, or the purchase of a new bottled gas range, can give him the advantage of gas cooking enjoyed before, we score a powerful point.

"Consequently, the most important step the bottled gas dealer can make is to talk over the idea with as many people as possible, because in that way the idea of bottled gas—which may never occur otherwise—is planted firmly in the prospect's mind."

Mr. Blackstone's method of thus boosting his bottled gas appliances and the gas, itself, has been simply to make two "prospect calls" for every delivery of an appliance or tank of gas. In the field daily for as much as nine hours, Mr. Blackstone drives his own truck, a small  $\frac{3}{4}$ -ton model with a rear bed designed for holding and easy unloading of 100-lb. tanks. Each morning he makes a list of deliveries for the day, then arranges sufficient time so he can do a selling, as well as a delivery, job at the same time.

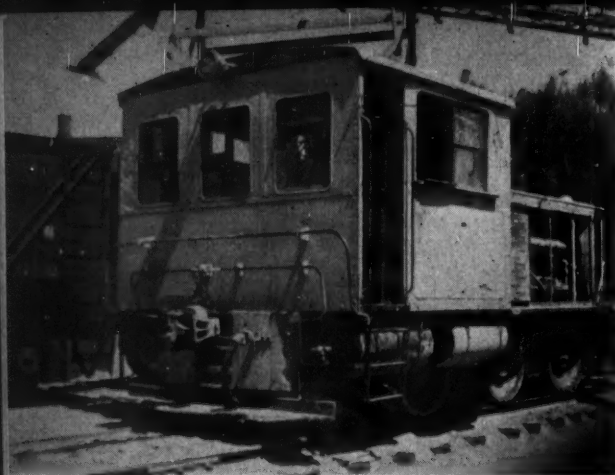
Following each call, after the tank has been delivered and paid for, Mr. Blackstone calls upon two or more homes, usually one on each side of the user's house. Occasionally, he ranges as much as a block from the user's home, but for the most part, stays close to that point where the advantage of

the prospect's familiarity with his neighbors can exercise its best effect. Going to the door and asking for the housewife, he introduces himself, explains his mission at the neighbor's house; and hands her a folder on gas appliances, at the same time asking whether or not she is familiar with bottled gas cooking.

#### Return Calls Average 90%

Mr. Blackstone then tells her the history of the average user in her own area, and suggests the names of several persons who may be friends of the family. In each instance, he is careful to talk only the better cooking conveniences offered, and the simplicity of using bottled gas. In 90% of such calls, he is invited to return later when the housewife's husband will be home. A half hour spent in this way often achieves an evening appointment, when Mr. Blackstone can see husband and wife at the same time, and come armed with facts and figures. On one call, typically, he sold a water heater, range, space heater and gas refrigerator on the same day.

This Indianapolis dealer averages 10 such calls per day; and makes from three to five appointments as a result. From consistently following this idea, he has managed to double the number of Pyrofax users in northern Indianapolis' suburbs, and to average sales of two gas appliances to each prospect. "A few extra minutes spent in selling can often mean the difference between one and five users in the same block," is his ultimate theory.



This locomotive, powered by butane, hauls ore from New Mexico mines to the main line for shipment to the smelter.

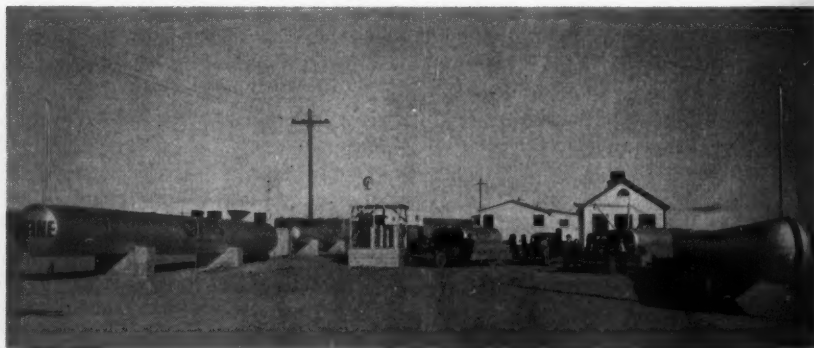
By FRED E. KUNKEL

## Butane Engine Hauls Ore

**A**MONG the industrial customers of the Vapor Gas Co., Albuquerque, N. M., which is operated by Mr. and Mrs. M. Stansbury, is the New Mexico Construction Co. of Alameda and Albuquerque which uses LP-Gas to fuel its locomotive that hauls ore from the mines. The same construction company uses

LP-Gas for several trucks and tractors. Butane supplied by the Vapor Gas Co. is also used by the Black Dome Mining Corp., and the Gold Dust Mines, both of Hillsboro, N. M., for mining operations.

Industrial uses of the company's product almost equal the home consumption market locally. In this field the company specializes in underground tanks. "We try to build up our customer list through good service," Mr. Stansbury explains. "We give them the service they

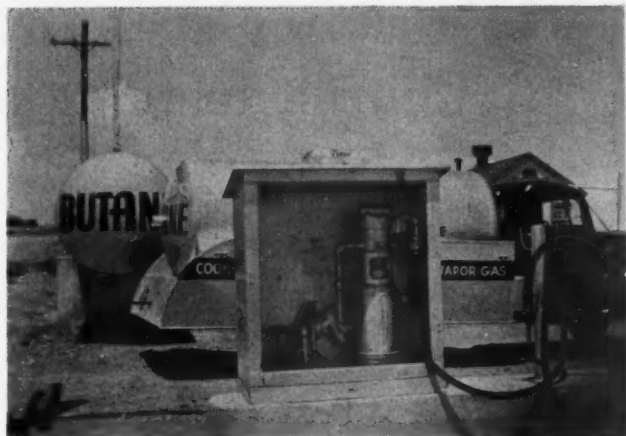


The plant of the Vapor Gas Co., Albuquerque, N. M., sets out on the open prairie, but it is modern in every particular.

▼

Bulk plant, delivery tank truck and loading equipment of Vapor Gas Company.

▲



want whenever they want it. Some people wait until their tanks get as low as they possibly can before buying more gas, and thereby often run out. When that happens our serviceman takes them a bottle which holds them over until one of our two trucks comes in."

The Vapor Gas Co., which recently moved into larger quarters, was one of the pioneer LP-Gas distributors in the state, having entered business five years ago. The plant, which consists of two 6000-gal. and one 1200-gal. tanks, is in operation 24 hours a day, has modern equipment, with Smith butane dispensing meters that register the exact gallons for the consumer, and a dispensing meter at the plant that registers in gallons; also a weighing platform, where gas is sold by the gallon but each bottle is weighed. There is also a hoist for loading tanks. The present volume is 50,000 gals. monthly.

A novel application of butane is the use of the fuel to burn off the bristles from hogs after slaughter-

ing, for which purpose, Mr. Stansbury states, one man is a frequent customer of the Vapor Gas Co.

Mr. Stansbury is at present experimenting with the use of butane to refrigerate milk delivery trucks. Most of the company's business comes from personal contact, although direct mail, newspapers and radio are frequently used.

### ◆ ◆ Charles Russell Is President of Thermogas Co., Inc.

Charles Russell has been elected president of Thermogas Co., Inc., Des Moines, Iowa. Mr. Russell's election by stockholders followed the accidental death in July of Rufus Scott, former president and treasurer of the company. Walter Christopherson has been named vice president and treasurer of the firm.

Mr. Russell has been associated with the firm for the last 10 years and has served as general manager for the last three years. In his new capacity he will serve as president, secretary and general manager. He also is Chairman of the Midwest Section of the L.P.G.A.

# LP-Gas Replaces Coal In Church Installation

By LEWIS E. BOWEN

Southern Gas & Equipment Company, Little Rock, Arkansas

**A.** C. DECLERK and Paul DeClerk, hydro gas dealers at Pocahontas, Ark., installed a 1000-gal. Hydro gas system at St. Paul's Catholic Church there in November last year. This system was used to furnish gas for a conversion burner installed in a three-S-12-Ideal Red-Flash boiler, with the burner rated to have a B.t.u. output of 1,200,000 per hour. The boiler was rated as being capable of handling 2750 sq. ft. of installed cast iron steam radiation, but 2600 ft. of radiation was actually installed.

A high-pressure gas line set at 10 lbs. was run from the Hydro system to a point just before entering the boiler where a large low-pressure regulator was installed, which reduced the pressure to six ounces. A line ran from the low-pressure regulator through two large meters to the pilot control and main shut-off valve. From there gas entered a proportional mixing valve, which was installed in the gas-air line, leading directly into the burner. A time-operated thermostat was installed in the main auditorium of the church, connected to a Mercoid switch, which operated a blower (of the proportional mixer) on the main burner.

When operating, the blower builds up a pressure which raises



**A. C. and Paul L. DeClerk, dealers,  
of Pocahontas, Ark.**

the weighted shut-off valve, letting the gas enter the proportional mixing valve. When the building becomes sufficiently heated this automatically trips the Mercoid switch, which cuts off the motor, thereby shutting off pressure under the weighted shut-off valve, which then automatically closes.

The boiler is equipped with an automatic safety pilot, pressure control which is set at 5 lbs. and a low water cut-off. These accessories operate in the same manner as a thermostat, except that they perform the function that their individual operations call for.

This system was used through the fall and winter of 1940-1941.



and Father Edward J. Yeager, of St. Paul's Church, has kept a careful check on the gas consumed by this burner. He says that, taking into consideration that janitor service was eliminated and the fact that the cleanliness of the operation of this burner will cut down expenses of redecoration, the entire operation will cost less than coal, which was previously used. The time thermostat works automatically after being set.

In addition to the steam radiators, we have installed a few radiant type heaters in the various rooms of the church. A high-pressure line connects this Hydro system with two other systems located at other points in the same neigh-

borhood. At various places along this high pressure line we branch off from the main line and run to low pressure regulators and meters which enter homes and a school. The writer, on behalf of the Southern Gas & Equipment Co., assisted DeClerk & DeClerk in engineering this installation.

DeClerk & DeClerk have one of the most attractive offices and display rooms in Arkansas; two fuel-delivery trucks, and an 18,000-gal. butane storage tank. This storage plant is equipped with a vapor differential compressor, which was built by the Arkansas Foundry Co. of Little Rock, Ark., and which is distributed by the Southern Gas & Equipment Co.



Interior of St. Paul's Catholic church in Pocahontas, Ark., which abandoned coal for LP-Gas for heating.

# Dairyman Says "No More Coal," So He Installs Butane

**O**LD hand-washing and sterilizing methods are being discarded in modern dairies and LP-Gas is coming into the picture as a safe, speedy and economical milk bottle sterilization aid.

A fine example of this is found in Horton's Dairy, Geo. A. Horton owner, about three and one-half miles west of Lawton, Okla., on U. S. Highway 62. At first view from a distance this dairy looks

By O. D. HALL

like a neatly painted cottage farm home. Then, come into the picture, 90 grazing Jersey cows, a low-lying dairy house, and cow barns, all kept so clean that hardly an odor emanates from them.

LP-Gas not only is the fuel used to operate the bottle washing and sterilizing equipment, but also to furnish fuel for a modern kitchen range, a hot water heater, floor furnace, and space heaters in the Horton home.

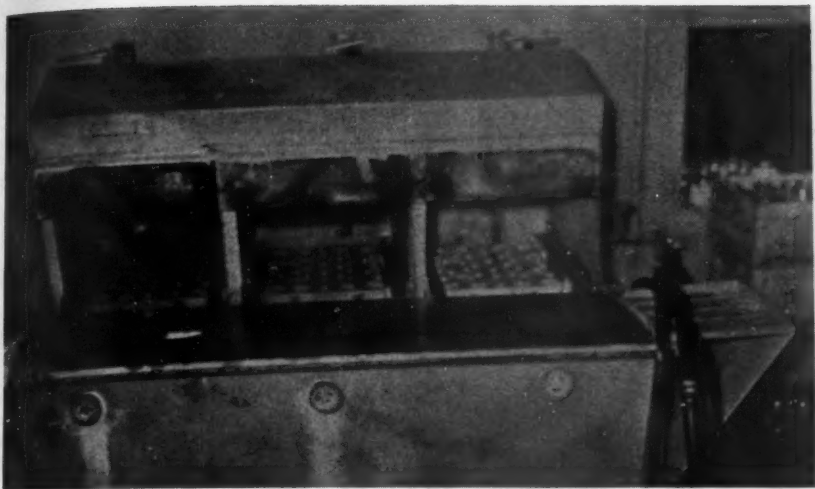
A new LP-Gas automatic pressure water boiler, with 3-hp., 100-lb., maximum working pressure rating, installed in February of this year, supplies plenty of hot water for the bottle sterilizing and can washing equipment installed in the dairy house. The boiler, manufactured specially to utilize LP-Gas, is connected by 80 ft. of pipe to a 300-gal. butane tank and the sterilizing equipment.

Hot water under pressure is carried from the boiler to the washing and sterilizing tank. This tank has three compartments, each of which is designed to hold a case of milk bottles. These cases of empty bottles are placed upside down in the compartments where hot, sterilized water is forced into them under high pressure.

Each bottle first is washed; then hot water, treated with a disin-



George A. Horton, beside his 3-hp., automatic pressure boiler manufactured to utilize LP-Gas fuel for sterilization purposes in dairies.



**Bottle sterilizing pressure tank, utilizing LP-Gas. It has three bottle-case compartments and turns out 40 cases an hour. Control is automatic.**

fectant powder, is forced into them. The bottles are then rinsed in a solution of caustic soda. All of this is done under automatic control of mixtures, water temperatures and pressure. The three-compartment washer has a capacity of 90 cases of empty bottles per hour. No impurities can be left in the milk bottles after they have gone through this process.

Another open-topped washer tank, also operated with LP-Gas, washes and sterilizes milk cans, pails and other larger dairy equipment.

Mr. Horton's face brightened when he was asked how he liked his butane equipment. "I not only save money by using it, but it is much cleaner than coal, which I formerly used, and it makes a hotter and more effective heat. It formerly required two men to operate the old sterilizing and wash-

ing equipment and now one man does it better and more quickly than could the two. I also have more comforts in my home with less work for my wife and at lower costs, since I put in butane equipment there," said Mr. Horton.

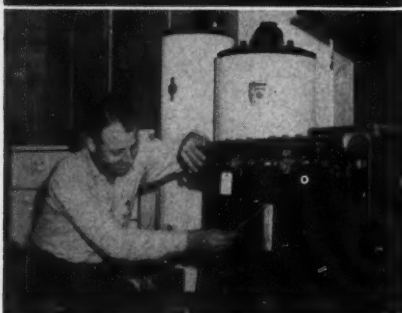
T. A. Dyer, manager of the Dyer Butane Gas Co., of Lawton, furnished the Horton dairy equipment and keeps the tank re-fueled. He operates two LP-Gas delivery trucks in southern Oklahoma and has been in business in Lawton for four years. He also handles a line of modern LP-Gas appliances.



### **Jones Brothers Offer Butane Service in Santa Anna, Texas**

Bob and Ed Jones, who opened their butane gas service and supply station in Santa Anna, Texas, last March, have now established their offices in the Santa Anna Milling Co. building.

## 800 Systems Sold In Two Years



**TOP:** Sam Daigle, Farmer's Butane Gas Co., Houston, Texas, explaining to Margaret Frankfurt, company employee, some of the sales points of Servel Electrolux.

**CENTER:** Space heater display featured for Fall.

**BOTTOM:** F. L. Protsman, salesman, examining a piece of heavy duty equipment.

**T**HROUGH approximately 10 years of association with city gas utilities with which he has had executive sales management posts, Sam Daigle, sales manager of Farmer's Butane Gas Co., Route 12, Houston, Texas, has learned the value of customer good-will. So he constantly keeps before his salesmen and servicemen the slogan, "Satisfied customers will build you or dissatisfied customers will break you." His experience has also taught him that you must deal honestly with customers, so this is another point that he guards in both hiring and training employees.

As a district manager for Houston Natural Gas Co., at Freeport, Texas, Mr. Daigle won first prize in one of the first water heater campaigns held under the sponsorship of the American Gas Association. He says he more enjoys making butane sales to rural customers than he did making appliance sales to city gas customers because he is contributing more to the happiness of the rural customer who has never experienced the satisfaction of doing the four big jobs with gas. With the city cousin, gas is an old story. The farmer usually thanks you, he says, for improving his living conditions.

Each of the company's six salesmen are given a protected territory and the sales management does not compete in any way with the salesmen. There are no floor

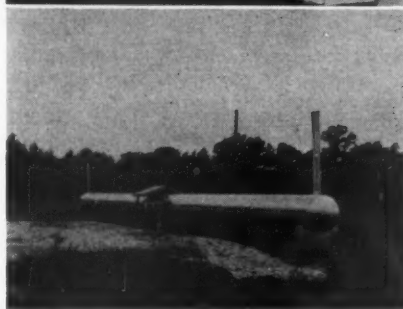
salesmen. Mr. Daigle credits 50% of new business to call-backs on satisfied customers who give the company leads on other interested parties. A policy is maintained of giving service and advice to anyone having trouble with a butane system whether the system is one that they have installed or one of another company.

Tom Ruland is owner of Farmer's Butane Gas Co. Through a distributorship with Dallas Tank & Welding Co., Inc., he sells the Economy Butane System at wholesale and to the retail trade. In the past two years 800 of the systems have been sold.

Two butane transport trucks and five installation trucks are operated. Storage facilities consist of two 6000-gal. Dallas Tank & Welding Co., Inc., bulk storage tanks. These are placed end to end on the back of the property.

Due to the fact that the company will not sell a system to a residence on a natural gas line, the gas company is friendly and has worked out an arrangement whereby their customer's bills can be paid in the office of the butane company. Another page has been taken from the experience of the gas company with regard to the sale of quality appliances. Mr. Daigle has proved that good appliances produce fewer service calls and greater customer satisfaction.

A little more than a year ago Farmer's Butane operated from two desks in a 10x12 ft. room in the corner of a grocery store. Their new establishment is most modern and commodious as will be seen by the accompanying pictures.



**TOP:** Sam Daigle and Margaret Frankfurt examining the broiling chart on a modern gas range.

**CENTER:** Partial view of appliance sales floor.

**BOTTOM:** Two 6000-gal. butane storage tanks placed end to end. Two transport trucks and five installation trucks complete the operating equipment.

# "Put the Right Man on the Job"

**I**T is my personal theory that good management of any business involves three basic principles, which are as applicable to the liquefied petroleum gas industry as other lines. These are:

1. See that your merchandise is right.
2. See that your dealers make money.
3. See that you employ the right men.

1. In the propane business the right merchandise is very important. We must be absolutely certain that the merchandise we sell will function 100% perfectly on propane gas. I may best explain this by pointing out the difference between a piece of merchandise operating on propane gas and one operating on manufactured gas. The latter has 530 B.t.u.'s per cu. ft. of gas while propane has approximately five times as many B.t.u.'s per cu. ft.—or 2550 B.t.u.'s. Thus, it is readily understood that our merchandise must be five times as accurate in its adjustments.

Another important factor in selecting the right merchandise is sales appeal. Your stock must be not what you like but what the public likes. Particularly in gas stoves must we cater to women's whims. They like to change and we must follow the modern trend in stove styles.

One recommendation I should like to make rather emphatically

By PETER A. ANDERSON

President, Utilities Distributors, Inc.  
Portland, Maine

because it is knowledge that I learned from bitter experience, and that is do not select *unknown* merchandise. A high pressure salesman sometimes makes us a very appealing offer involving large discounts. This happened to me years ago when I was in the grocery business. I fell for a sales story and took on an unknown brand of soap in place of a well known brand I had been selling. It seemed like a good proposition to me and I persuaded one of my best customers many times to change her order. Finally she informed me she was going to shop elsewhere as she wanted to buy all of her groceries in one store and absolutely could not use the substitute soap that I supplied her. I quickly realized that I could lose other good customers for the same reason and I resolved to stock nothing but well known brands in the future, which settled that question.

2. In order to ascertain that a dealer makes money we must allow him a fair profit. If he loses money on the merchandise he sells he will cheat his customers. Things like this spread like wildfire over a territory and there is nothing so detrimental to a dealer's business as a dissatisfied customer; and no advertising as good as a happy one.



We pride ourselves on not being high pressure salesmen who make a sale and say good-bye, but on living with our dealers and customers through the years, selling them additional appliances as their needs arise. This, we feel, is the true essence of good salesmanship; and sales are essential for our dealers to make money.

### One Way to Help Dealer

One factor, perhaps the most important one to watch, is a dealer's financial condition. A dealer, we must realize, is the "whole works" in his business, whereas in a large organization we have experts to control the various departments. A dealer who is sales-minded is usually not a capable credit man and he is so interested in making sales that he completely overlooks his financial condition.

(It is an exceptional man who is good at all the things necessary to make a success.) We feel, therefore, that it is up to us to restrain a dealer who shows a tendency to take on more credit than he can comfortably handle.

3. In different types of business, different jobs constitute the key positions. In our particular business I believe the following positions are the four most important:

**Manager:** He must be able to read personality; be diplomatic and persistent.

**Sales manager:** Aggressive with vision and imagination.

**Credit manager:** A little bit inclined to be salesminded. Unusually fair and able to keep confidences.

**Operation and service manager:** Very good at detail, with the necessary determination to



Adherence to three principles of good business management have knit the UDI dealer organization into a compact cooperative group. The banquet at this year's annual UDI convention was attended by over 400 members, their wives, and families.

have his orders executed exactly, as the smallest error can have disastrous results. Must be a good mechanic.

The American industries have proved, both in time of peace as well as in time of war, that they can turn out a greater production in quantity and quality than any competing country in the world; and this is all due to specialization. Thirty years ago the automobile industry was not acquainted with conveyors and assembly lines where specialists do just one single operation. Men did not dream, even in their wildest imagination, that there would ever be streamlined automobiles with finger-tip controls, with the ability to start and stop as fast as a bird and which would last longer than any previous type of conveyance. This has all been accomplished by good management—or by the policy of *putting the right man on the job.*

### **Report Says Propane Sales Up 300% in Pittsburgh Area**

"Considering 1941 with 1940, month by month, sales of propane gas in districts surrounding Pittsburgh have risen 300%," reports J. C. Goss, president, Goss Gas Products Co., Pittsburgh, Pa.

Increases have come principally in Beaver and Westmoreland counties, Mr. Goss explains because, first, many families, accustomed to using gas in cities and seeking lower living costs, have migrated from 30 to 40 miles out into the country; and, second, because defense industry plants located in outlying communities, have offered opportunity for employment at high wages, both attracting country workers to the mills and enabling the

workers not living near pipelines to afford propane gas.

Lately, says Mr. Goss, because of lack of steel for cylinders, orders cannot always be filled. The company operates six propane distributing trucks.

### **C.N.G.A. Plans LP-Gas Paper At Annual Fall Meeting**

Keyed to National Defense and presentation of papers dealing with subjects pertinent to the industry, the 16th Annual Fall All-Day Technical Meeting of California Natural Gasoline Association will be held in the Ambassador hotel, Los Angeles, California, Oct. 31, according to the joint announcement of W. C. Dayhuff, C.N.G.A. president, and M. W. Kibre, chairman of the Fall Meeting committee in charge of the event.

One of the feature papers will be "The Importance of Natural Gasoline in National Defense" which will be delivered by a representative of the Petroleum Coordinator's office. Among other papers planned is "Studies in Standardization of Gaging Methods for the Shipping of Liquid Petroleum Products by Vehicular Units," by W. B. Parks, Norwalk Co.

### **Eastern Section Meets Sept. 29 At Bear Mountain, N. Y.**

The Fall meeting of the Eastern Section, L.P.G.A., will be held at the Bear Mountain Inn, Bear Mountain, N. Y., on Sept. 29. The date formerly scheduled was Sept. 22.

The principal subject to be discussed concerns the position of the industry with respect to the future supply of materials. A report will be made to the meeting of what transpired at the general Association meeting in Chicago on Sept. 4.

A series of sports events will follow the business meeting.

# SELLING

## Cold Canvassing

Did you ever "cold canvass"? Or are you one who feels that the blind call method is a slow and agonizing way to build a business? Here is one viewpoint built upon personal experience. Listen to this man's story:

"Take it from me, there is no better way to make actual sales and build prospect lists than cold canvassing. I have gone out in the early morning with a pocketful of hot leads, half-a-dozen definite appointments made over the phone, and several call-backs from the day before.

"And I have come in at night without a single signed contract and a call-back list of very questionable value.

"The next day I have gone out 'cold-turkey' and have made as many as 10 sales in eight hours!

"I can truthfully say I never had a blank day when cold canvassing. Never once in my experience have I worked faithfully all day on a house-to-house basis and not made at least one sale. Three sales have been my 'usual' minimum.

"Why is this true? Why is it that good leads often dwindle away to nothing and sales develop from thin air? Some say it is the law of the averages at work. Which is partly true. But why doesn't it work better for me on definite prospects?

"I think one answer, and an important one, is to be found in the attitude of the salesman in his approach. With definite prospects he may be over-confident, less informative or a little too aggressive. But when he rings a cold doorbell he musters to his aid every bit of wit and courtesy and ingenuity and resourcefulness he possesses to create interest in his product and hold the attention of the stranger. Having no knowledge of the prospect's tastes, position, or needs, he has to spar for an opening. To do this he must take the offensive and talk convincingly. There are always advantages to be gained when one is on the offensive. Watch a prize fight or a football game to see how it works. In reaching out for fertile ground in which to plant the seed, you watch every expression, dive into every opening, capitalize upon every inch gained.

"The attitude of the one you approach in a cold canvass is also important. In nine out of 10 times you are not welcome for the myriad of reasons easy to imagine. That's one part of the law of averages referred to. But with the tenth call your personality, the forcefulness of your 'attack', the novelty of your approach, or the susceptibility of the prospect opens the door for you. If the article you sell requires only a moderate outlay, the clinching arguments are

advanced, the contract is signed, and you waltz up the street with a well-earned order. If you are selling a high cost product such as an LP-Gas system and appliances, you have gained your primary victory when you get a chance to tell your story and make an appointment for a later demonstration in the home or at your store.

"That victory, pulled out of a clear sky, does wonders for your morale. You have proved the law of averages. You have won a goal by your own ability. You have dominated a situation. And you



**"BIG-HEAD" OSCAR**\*... thinks he knows all there is to know about selling, how conditions could be improved, why prospects put off buying, what's wrong with what he's selling . . . the only thing he **DOESN'T** know is why he can't get more business.

\* From Belnap and Thompson's "Hobby Club Rush Plan."

swing into the next 10-call routine with just the right amount of confidence and faith in yourself and in the law that says you will win if you will work.

"Work is the real key to cold canvassing success. You can't win if you lay off an hour to rest in the park or watch a bunch of kids play ball on a corner lot, or snooze in an upholstered seat of a modern bowling alley or drop into a mid-afternoon movie or stop by for a round of drinks with some of the boys.

"You just have to keep a-going. Door after door. Completely forgetting or ignoring the last turn-down—the last *nine* turn-downs. Looking ahead expectantly to the sale that is certain to come if you don't lose heart and your feet hold out.

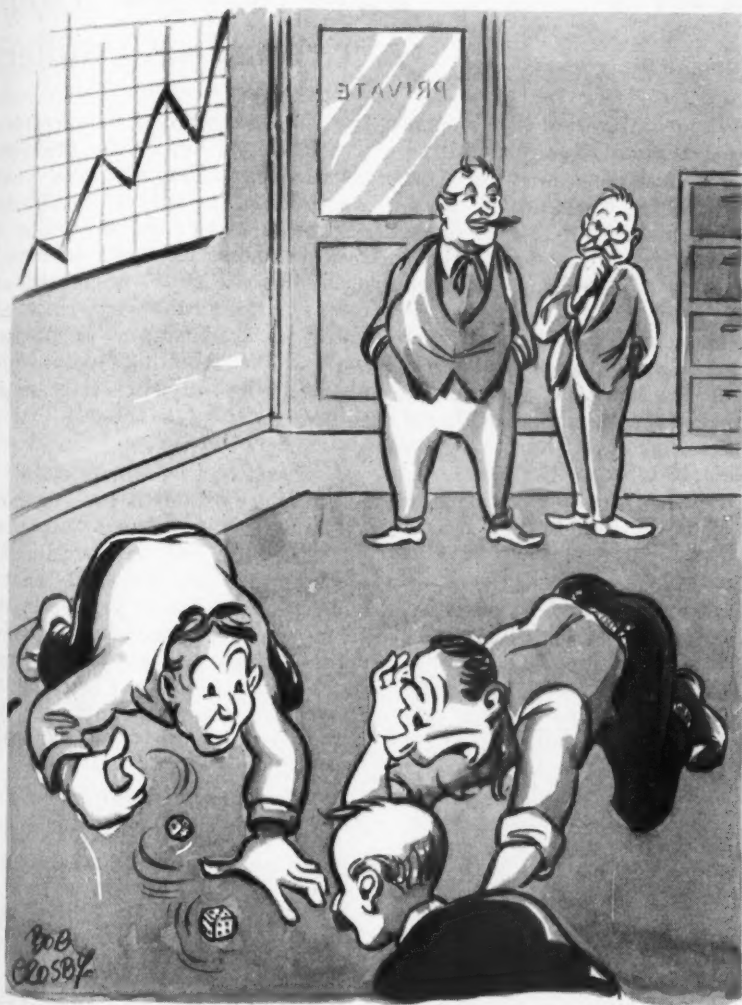
"That's cold canvassing. It's often hard work. It always takes courage and nerve. It's often fun. Sometimes it's first rate adventure. You meet fine people, you gain pleasant surprises, you learn much about human nature, you give yourself invaluable disciplining—and you pull down regular commission checks! . . . Well, isn't that what you're after?"

## Opportunities

Fall is here. And it is an excellent time to check up on the needs of your present customers. Are their appliances and equipment in good shape?

Alert salesmen revisit all new prospects at this time of year. But every old customer should get a call, too. It's good business.

**DOTTED LINE ROSCOE ... by Bob Crosby**



**"The boys are tryin' to decide who gets to sell the  
8 refrigerators comin' in next month."**

# THE BOTTLED GAS MANUAL

## Chapter 4

## What Goes On Within A Propane Cylinder?

**I**F WE have digested all that we have discussed in our last three previous "sessions" we are now ready to tackle some of the practical problems of our Industry. Let's start right at the outside of the building with the propane cylinders!

A propane cylinder is a source of mystery to most people—yet nothing could be simpler. How many times are we asked what material is packed inside of the cylinders in order to absorb the gas—will the cylinders freeze or burst, how can propane be a gas when it is a liquid—and any number of like questions!

Let's take a look at Table No. 1 in Chapter 1 again. Here it tells us that the initial boiling point of propane is  $-48.1^{\circ}$  Fahrenheit. Imagine it when you and I are nearly frozen, propane is boiling! What makes it boil? The heat in the air!

You and I understand about heat being a form of molecular energy, and that there is not a complete absence of heat until absolute zero, or  $-459.72^{\circ}$  F. is reached, but this is not known by the average person. How they will smirk when we tell them about propane boiling at  $-48.1^{\circ}$  F. The reason for this is that both the Centigrade and Fahrenheit thermometer scales resort to the minus sign in designating

the lower common temperatures which we encounter in the Temperate Zone. Temperatures which we think of as cold are really not cold at all when the entire range of the thermometric scale is considered. At  $-48.1^{\circ}$  F. there still remains considerable molecular activity in a substance. If propane has a low boiling point why shouldn't it boil when it comes in contact with a substance that is actually hotter?

*Just what is a propane cylinder?* A propane cylinder is nothing more than a strong cylinder, drum, or barrel, made out of special alloy steel. It has an outlet at the top and a precautionary gadget in the form of a pressure relief valve which is usually built into the cylinder valve and is not part of the drum itself. Some of the older cylinders use a plain valve and have fusible plugs.

*How is a propane cylinder filled?* At atmospheric temperatures and

- The first three chapters of *The Bottled Gas Manual* series, by C. C. Turner, covering the subjects, "What is Propane?", "Fundamentals of the Behavior of Gases," and "Heat and Temperature," appeared in the July, August and September issues of BUTANE-PROPANE NEWS. Chapter 4 is presented herewith. Succeeding chapters will appear monthly. The series will constitute a valuable text book and field manual that should be preserved by everyone in the LP-Gas industry.—Editor.



pressures propane is a gas. We must go back to Boyle's Law (Chapter 2) which states that "at a constant temperature the volume of a given mass of gas varies inversely as the pressure sustained by it." It is possible under pressure to so compress a gas and decrease its volume that it becomes a liquid. Propane is held in liquid form under pressure, and when a cylinder is filled at the bulk plant liquid propane is pumped into it through a hose that is connected to the valve on top of the cylinder.

If you will examine the top of a propane cylinder you will note the initials "TW" stamped into it, after which appear some numerals. This is the tare weight, or weight of the cylinder when it is empty. If the cylinder happens to be what we in the industry term a 100-lb. cylinder—that is, one which is designed to hold 100 lbs. by weight of liquid propane—the scales are set at 100 lbs above the tare\* weight, and the valve on top of the cylinder is closed when the scales tip. This may be done by an automatic device or by a trusted employe who watches the filling of cylinders very carefully.

*Are the cylinders entirely filled with liquid propane?* No, they are not, and for a very good reason. We have learned from Chapter 2 that liquids are but slightly compressible, and in Chapter 3 we learned of their expansion under heat. If a cylinder were entirely filled and then subjected to heat in excess of its filling temperature, the liquid within it would expand and either distort the cylinder or

burst it. This is what we term in the industry as "going hydrostatic" and it is why only the capable employes are allowed to charge cylinders at a bulk plant. Their work is usually double-checked by a second weighing of the cylinder.

*The relation of boiling point to pressure.* If you and I were on a hiking trip, and in the course of our travels climbed a mountain, we could tell the approximate height of that mountain if we but had a thermometer, a kettle, some water, and a fire. We could determine the height by observing the boiling point of water. A rough rule to follow is that the boiling point of water decreases 1° F. for every 550 ft. above sea level. According to this, if the boiling point of water happened to be 192° F. we would know that we were about  $(212-192) 550 = 11,000$  ft. above sea level.\*\*

Why is this? It is because a reduction in the atmospheric pressure makes it easier for the water to boil. Conversely, if we increase the pressure on the water above atmospheric pressure we raise the boiling point. If the pressure within a steam boiler is 20.3 lbs. gage pressure (35 lbs. absolute pressure) the boiling point of water is 259.3° F. Let us suppose that under this steam boiler we have a fire just large enough to keep the water boiling at 259.3° F. The pressure will remain constant at 35 lbs. absolute pressure. Let our fire die down just a little bit and boiling

\* In actual practice an allowance is made for the drag-weight of the hose.

\*\* Actually 10,685 feet—an error of only 2.8+ % in a rough approximation.

will cease until the pressure has dropped correspondingly.

*The effect of temperature on pressure within a propane cylinder.* What we have said concerning a steam boiler is also true in reference to propane within a cylinder. A propane cylinder is in reality a propane vapor boiler. The fire is the heat which the cylinder draws from the atmosphere. At atmospheric pressure propane boils at  $-48.1^{\circ}$  F. As the level of heat (temperature) is increased the boiling point of propane within the cylinder is increased because of the pressure built up by the vaporized propane. For want of a better term we will call that point where tem-

perature produces a certain pressure within a bottle the "Point of Equilibrium" for at that point boiling of the liquid propane will only go on with sufficient rapidity to replace pressure lost by the condensation of propane. (Table No. 11.)

*Just what does happen within a propane cylinder?* Bearing in mind what we have had to say concerning the "point of equilibrium," let us take a typical example and see just what does happen when propane is drawn from a cylinder in this condition. Let us assume a temperature of  $80^{\circ}$  F., at which point the cylinder is in equilibrium at a gage pressure of 128.1 lbs. Let

**TABLE 11. POINT OF EQUILIBRIUM BETWEEN TEMPERATURE AND PRESSURE IN PROPANE CYLINDERS**

If The Temperature Is $^{\circ}$ F.	The Pressure in the Bottle Is		If The Temperature Is $^{\circ}$ F.	The Pressure in the Bottle Is	
	Absolute Lbs.	Gage Lbs.		Absolute Lbs.	Gage Lbs.
-75	6.37	*17.0	30	66.3	51.6
-70	7.37	*14.9	35	72.0	57.3
-65	8.48	*12.7	40	78.0	63.3
-60	9.72	*10.1	45	84.6	69.9
-55	11.1	*7.3	50	91.8	77.1
-50	12.6	*4.3	55	99.3	84.6
-45	14.4	*0.6	60	107.1	92.4
-40	16.2	1.5	65	115.4	100.7
-35	18.1	3.4	70	124.0	109.3
-30	20.3	5.6	75	133.2	118.5
-25	22.7	8.0	80	142.8	128.1
-20	25.4	10.7	85	153.1	138.4
-15	28.3	13.6	86	155.3	140.5
-10	31.4	16.7	90	164.0	149.0
-5	41.9	27.2	95	175.0	160.0
0	38.2	23.5	100	187.0	172.0
5	41.9	27.2	105	200.0	185.0
10	46.0	31.3	110	212.0	197.0
15	50.6	35.9	115	226.0	211.0
20	55.5	40.8	120	240.0	225.0
25	60.9	46.2	125	254.0	239.0

\* Pressures so marked are inches of mercury below one standard atmosphere ( $29.92^{\circ}$ ).  
All other pressures are in pounds per square inch.  
The above table is taken from Page 9. "Handbook Butane-Propane Gases," 2nd edition.

# During THE DEFENSE EMERGENCY

## FISHER GOVERNOR COMPANY MAKES THESE RECOMMENDATIONS:

**1** Repair and recondition all available regulator equipment not now in service because of worn or broken parts. Fisher Governor Company maintains a complete repair service for your convenience. Order parts needed, using Fisher illustrated repair parts lists or send in your old regulators for complete reconditioning.

**2** Keep regulators, now in service, in good repair by frequent inspection. Anticipate possible needs for replacement parts by keeping a stock on hand. We are making every effort to maintain adequate stocks of repair parts and can assure reasonably prompt delivery.

**3** Eliminate non-profitable installations. You cannot afford to tie up equipment on installations that use only a very limited amount of gas such as those in service only a few months of the year. Adopt a service charge plan or utilize the regulators on more profitable installations.

**4** Economize on regulators by changing over multiple drum installations to single drum units wherever possible. In other words spread out your available control assemblies and accessories as far as you can.

*Help yourself and the industry during the present emergency by considering seriously these recommendations. We offer our full co-operation in this program. Write for repair sheets or information on necessary accessories.*

## FISHER GOVERNOR COMPANY

929 Fisher Building

• MARSHALLTOWN, IOWA

us draw this pressure down to 92.4 lbs. gage pressure. If the temperature were reduced at the same time to 60° F. the cylinder would remain in equilibrium, but as this is not the case and both the liquid and cylinder wall have been cooled by drawing the pressure down to 92.4 lbs., the cylinder wall will pick up heat from the atmosphere and transmit it to the liquid until the temperature of both the cylinder wall and the liquid is restored to 80° F. At this point, equilibrium will be restored and the pressure within the cylinder will return to 128.1 lbs. gage pressure. This is the condition if no gas is drawn from the cylinder after its pressure has been reduced to 92.4 lbs., but if there is a slow, continuous draw, the temperature of the cylinder wall will be somewhat below 80° during the period of draw, and it will continue to draw heat from the atmosphere and transmit it to the liquid until such a time as the draw ceases and equality is restored between the temperature of the atmosphere, cylinder wall and liquid. At this point equilibrium between temperature and pressure will again be restored.

*Factors which govern the rapidity of vaporization.* From Table 1 in Chapter 1, it will be noted that the latent heat of vaporization of propane at the boiling point is 192.6 B.t.u.'s per lb. This means that for every pound of propane vaporized, 192.6 B.t.u.'s must be obtained from some source, and in the case of a bottled gas installation this is from the atmosphere, unless artificial heat is supplied. The governing factor, then, is the

rapidity with which heat for vaporization can be supplied and transmitted to the liquid propane. There are four variables which govern this transfer of heat and they are as follows:

1. The heat level of the atmosphere above the boiling point of propane.
2. The presence or absence of motion in the atmosphere.
3. The area of cylinder surface in contact with the liquid propane.
4. The rate at which the cylinder can transmit heat to the liquid propane per square foot of cylinder surface in contact with it, per unit of time, per degree of temperature differential.

In the foregoing I have purposely avoided the amount of energy absorbed by the cylinder walls from the radiant rays of the sun. My reason for doing this is that in any problem we must take into consideration the most unfavorable circumstances. Those which are most unfavorable for heat absorption occur at night in a perfectly quiet atmosphere; hence, the question of radiant heat does not enter into our calculations for this condition.

*Filled heights and rates of vaporization in 100-lb. cylinders.* For much of what follows, I am deeply indebted to Norman Evans, of the Pressed Steel Tank Co. An excellent card put out by Scaife Co. has done much to call attention of the industry to the danger of over-filled cylinders, and it served to arouse my curiosity as to the filled heights of cylinders at various temperatures. Tables 12 and 13 were compiled from measurements furnished to me by the Pressed Steel Tank Co., and are based upon an

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## ROBERTSHAW THERMOSTAT COMPANY

Youngwood, Pennsylvania



TABLE 12. POUNDS OF LIQUID PROPANE IN STANDARD 100LB. CYLINDER AT VARIOUS FILLED HEIGHTS AND TEMPERATURES \*

		PROPANE LIQUID TEMPERATURES, DEGREES FAHRENHEIT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
INCHES OF LIQUID LEVEL FROM THE GROUND	DEPTH OF LIQUID IN CYLINDER IN INCHES	GALLONS OF LIQUID AT FILLED HEIGHT	(HEAVY BLACK LINE INDICATES MAXIMUM ALLOWABLE FILLING LEVEL OF CYLINDER)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
			-30°	-25°	-20°	-15°	-10°	-5°	0°	+5°	+10°	+15°	+20°	+25°	+30°	+35°	+40°	+45°	+50°	+55°	+60°	+65°	+70°	+75°	+80°	+85°	+90°	+95°	+100°																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
36	35%	24.51																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

\* THE FIGURES IN THIS TABLE HAVE BEEN PREPARED BY C.C. TURNER FOR BUTANE-FORMER NEWS AND ARE BASED UPON DIMENSIONS FURNISHED BY PRESTESSE STEEL TANK CO., MILWAUKEE, WIS., AS APPLYING TO STANDARD 100LB. "MOMMY" CYLINDERS. THEY ARE ALSO APPLICABLE TO CYLINDERS OF OTHER METALS WHICH CONFORM APPROXIMATELY TO THE SAME DIMENSIONS.

TABLE 13. VAPORIZATION OF PROPANE FROM A STANDARD 100LB CYLINDER IN STILL AIR AT NIGHT

STILL AIR VAPORIZATION OF PROPANE FROM A STANDARD 100LB CYLINDER IN STILL AIR AT NIGHT. THE FIGURES IN THIS TABLE HAVE BEEN PREPARED BY C.C. TURNER FOR BUTANE-FORMER NEWS AND ARE BASED UPON DIMENSIONS FURNISHED BY PRESTESSE STEEL TANK CO., MILWAUKEE, WIS., AS APPLYING TO STANDARD 100LB. "MOMMY" CYLINDERS. THEY ARE ALSO APPLICABLE TO CYLINDERS OF OTHER METALS WHICH CONFORM APPROXIMATELY TO THE SAME DIMENSIONS.



TESTED STEEL TANK CO. MILWAUKEE, WIS., AS APPLYING TO STANDARD 100LB. "MACKNEY" CYLINDERS, THEY ARE ALSO APPLICABLE TO CYLINDERS OF OTHER METALS WHICH CONFORM APPROXIMATELY TO THE SAME DIMENSIONS.

TABLE 13. VAPORIZATION OF PROPANE FROM A STANDARD 100LB. CYLINDER IN STILL AIR AT NIGHT

THESE EXPERIMENTS SHOWED AN ABSORPTION FOR STEEL CYLINDERS UNDER CONDITIONS DESCRIBED OF 26.0% PER SQ. FT. ABSORPTIVE SURFACE PER DEGREE FAHRENHEIT TEMPERATURE DIFFERENTIAL.																									
FILLED HEIGHT FROM GROUND LEVEL (INCHES)	CYLINDER IN INCHES	SQUARE FEET OF ABSORPTIVE SURFACE	MAXIMUM DRAIN IN POUNDS PER HOUR AT VARIOUS FAHRENHEIT TEMPERATURES UNDER PERFECTLY DRY AIR CONDITIONS. THESE MAXIMUMS ARE POSSIBLE BUT ARE NOT RECOMMENDED FOR GREATEST EFFICIENCY IN FUEL UTILIZATION.										MAXIMUM DRAIN IN POUNDS PER HOUR AT VARIOUS FAHRENHEIT TEMPERATURES UNDER MOIST AIR CONDITIONS WITHOUT THE CYLINDER WALL FROSTING.												
			PER 100 SQUARE FEET OF ABSORPTIVE SURFACE										PER 100 SQUARE FEET OF ABSORPTIVE SURFACE												
			-38.1°	-28.1°	-18.1°	-8.1°	+1.9°	+11.9°	+21.9°	+31.9°	+41.9°	+51.9°	+61.9°	+71.9°	+81.9°	+91.9°	+101.9°	+40°	+50°	+60°	+70°	+80°	+90°	+100°	
5	4"	2.728	5.456	0.0293	28	5.7	8.5	1.13	1.41	1.69	1.98	2.26	2.54	2.83	3.11	3.39	3.67	3.96	4.24	4.52	4.79	5.07	5.35	5.63	5.91
6	5"	3.044	6.088	0.0316	32	6.3	9.5	1.26	1.58	1.89	2.21	2.52	2.84	3.16	3.47	3.79	4.10	4.42	4.74	5.05	5.37	5.69	6.01	6.33	6.65
7	6"	3.360	6.720	0.0348	35	7.0	10.4	1.39	1.74	2.08	2.43	2.78	3.13	3.48	3.82	4.17	4.52	4.87	5.22	5.57	5.92	6.27	6.62	6.97	7.32
8	7"	3.676	7.352	0.0381	38	7.6	11.4	1.52	1.90	2.28	2.66	3.04	3.42	3.81	4.19	4.57	4.95	5.33	5.71	6.09	6.47	6.85	7.23	7.61	7.99
9	8"	3.992	7.984	0.0414	41	8.3	12.4	1.65	2.07	2.48	2.89	3.31	3.72	4.14	4.55	4.96	5.38	5.79	6.21	6.62	7.03	7.44	7.85	8.26	8.67
10	9"	4.308	8.616	0.0447	45	8.9	13.4	1.78	2.23	2.68	3.12	3.57	4.02	4.47	4.91	5.36	5.81	6.25	6.70	7.15	7.60	8.05	8.50	8.95	9.40
11	10"	4.624	9.248	0.0480	48	9.6	14.4	1.92	2.40	2.88	3.36	3.84	4.32	4.80	5.28	5.76	6.24	6.72	7.20	7.68	8.16	8.64	9.12	9.60	10.08
12	11"	4.940	9.880	0.0512	51	10.2	15.9	2.04	2.56	3.07	3.58	4.09	4.60	5.12	5.63	6.14	6.65	7.16	7.68	8.19	8.70	9.21	9.72	10.23	10.74
13	12"	5.256	10.512	0.0545	54	10.9	16.3	2.18	2.72	3.27	3.81	4.36	4.90	5.45	5.99	6.54	7.08	7.63	8.17	8.71	9.26	9.80	10.34	10.88	11.42
14	13"	5.572	11.144	0.0578	58	11.5	17.3	2.31	2.89	3.46	4.04	4.62	5.20	5.78	6.35	6.93	7.51	8.09	8.67	9.25	9.83	10.41	10.99	11.57	12.15
15	14"	5.888	11.776	0.0611	61	12.2	18.3	2.44	3.05	3.66	4.27	4.88	5.49	6.11	6.72	7.33	7.94	8.55	9.16	9.77	10.38	10.99	11.60	12.21	12.82
16	15"	6.204	12.408	0.0644	64	12.8	19.3	2.57	3.22	3.86	4.50	5.15	5.79	6.44	7.08	7.72	8.37	9.01	9.66	10.31	10.95	11.60	12.24	12.89	13.53
17	16"	6.520	13.040	0.0677	68	13.5	20.3	2.70	3.38	4.06	4.73	5.41	6.09	6.77	7.44	8.12	8.80	9.47	10.15	10.83	11.51	12.19	12.87	13.55	14.23
18	17"	6.836	13.672	0.0709	71	14.1	21.2	2.83	3.54	4.25	4.96	5.67	6.38	7.09	7.79	8.50	9.21	9.92	10.63	11.34	12.05	12.76	13.47	14.18	14.89
19	18"	7.152	14.304	0.0742	74	14.8	22.2	2.96	3.71	4.45	5.19	5.93	6.67	7.42	8.16	8.90	9.64	10.38	11.12	11.86	12.60	13.34	14.08	14.82	15.56
20	19"	7.468	14.936	0.0775	77	15.5	23.2	3.10	3.87	4.65	5.42	6.20	6.97	7.75	8.52	9.30	10.08	10.86	11.64	12.42	13.20	13.98	14.76	15.54	16.32
21	20"	7.784	15.568	0.0808	81	16.2	24.2	3.23	4.04	4.84	5.65	6.46	7.27	8.08	8.88	9.69	10.5	11.3	12.1	12.9	13.7	14.5	15.3	16.1	16.9
22	21"	8.100	16.200	0.0841	84	16.8	25.2	3.36	4.20	5.04	5.88	6.72	7.56	8.41	9.25	10.09	10.93	11.77	12.61	13.45	14.29	15.13	15.97	16.81	17.65
23	22"	8.416	16.832	0.0873	87	17.4	26.1	3.49	4.36	5.23	6.11	6.98	7.85	8.73	9.60	10.47	11.34	12.21	13.08	13.95	14.82	15.69	16.56	17.43	18.30
24	23"	8.732	17.464	0.0906	91	18.1	27.1	3.62	4.53	5.43	6.34	7.24	8.15	9.06	9.96	10.87	11.78	12.69	13.59	14.50	15.41	16.32	17.23	18.14	19.05
25	24"	9.048	18.096	0.0939	94	18.7	28.1	3.75	4.67	5.63	6.57	7.51	8.45	9.39	10.33	11.27	12.21	13.15	14.09	15.03	15.97	16.91	17.85	18.79	19.73
26	25"	9.364	18.728	0.0972	97	19.4	29.1	3.88	4.86	5.83	6.80	7.77	8.74	9.72	10.69	11.66	12.63	13.60	14.57	15.54	16.51	17.48	18.45	19.42	20.39
27	26"	9.680	19.360	0.1005	100	20.1	30.1	4.02	5.02	6.03	7.03	8.04	9.04	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0
28	27"	9.996	19.992	0.1038	104	20.7	31.1	4.15	5.19	6.22	7.26	8.30	9.34	10.3	11.4	12.4	13.4	14.5	15.5	16.5	17.6	18.6	19.7	20.7	21.8
29	28"	10.312	20.624	0.1070	107	21.4	32.1	4.28	5.35	6.42	7.49	8.56	9.63	10.7	11.7	12.8	13.9	14.9	16.0	17.1	18.2	19.3	20.4	21.5	22.6
30	29"	10.628	21.256	0.1103	110	22.0	33.0	4.41	5.51	6.61	7.72	8.82	9.92	11.0	12.1	13.2	14.3	15.4	16.5	17.6	18.7	19.8	20.9	22.0	23.1
31	30"	11.260	22.520	0.1169	117	23.3	35.0	4.67	5.84	7.01	8.18	9.35	10.5	11.6	12.8	14.0	15.1	16.3	17.5	18.7	19.9	21.1	22.3	23.5	24.7
32	31"	11.576	23.152	0.1194	123	24.6	37.0	4.89	6.17	7.40	8.63	9.87	11.1	12.3	13.5	14.8	16.0	17.2	18.5	19.7	21.0	22.2	23.5	24.8	26.1
33	32"	11.892	23.784	0.1234	129	25.9	39.0	5.11	6.44	7.77	9.10	10.43	11.76	13.09	14.42	15.75	17.08	18.41	19.74	21.07	22.40	23.73	25.06	26.39	27.72
34	33"	12.208	24.416	0.1267	135	27.2	41.0	5.33	6.71	8.09	9.47	10.85	12.23	13.61	14.99	16.37	17.75	19.13	20.51	21.89	23.27	24.65	26.03	27.41	28.79

DATA FOR THIS TABLE BASED ON EXPERIMENTS MADE BY C.C. TURNER FOR BUTANE - PROPANE NEWS

interpretation of the graph appearing on Page 26 of "Handbook, Butane-Propane Gases, Second Edition," also, personal experiments conducted to determine a conservative factor governing the transfer of heat from the cylinder wall to the liquid propane in the average 100-lb. propane cylinder.

*Determining the rate of transference of heat from the cylinder wall to the liquid propane.* As stated previously, the most unfavorable conditions for heat transference would be in still air at night, and in order to approximate these conditions the following experiments were conducted in a dark basement where the circulation of air was very poor. A steel range boiler of 12x36 in. internal dimensions was used. Its surface area was 10.99 sq. ft. and its contents 17.62 gal., or 146.77 lbs. of water. Several dairy thermometers were checked by both the salt and ice test for 32° F. and the boiling water test for 212° F. until two were found that were in calibration. Details of these tests follow:

*Test No. 1.* Boiler filled with water. Water allowed to run through cylinder for 1 hour in order to equalize temperature of water and cylinder wall. At the end of an hour the water was shut off, and an hour's test for heat transference was taken.

Temperature of cellar at start of test...59°

Temperature of cellar at end of hour...59°

Mean average temperature of cellar during test...59°

Temperature of water in boiler at start of test...42°

Temperature differential...17°

Temperature of water at end of 1 hour...45°

Temperature of water at beginning of hour...42°

Temperature of water raised in 1 hour...3°

B.t.u.'s absorbed by water in 1 hour... $146.77 \times 1 \times 3 = 440.31$

B.t.u.'s absorbed per sq. ft. of boiler area...440.31

$$\frac{\quad}{10.99} = 40.06$$

B.t.u.'s transferred to water from cellar atmosphere per hour, per sq. ft. of boiler area, per degree differential in temperature...40.06

$$\frac{\quad}{17} = 2.35$$

*Test No. 2.* Conditions of preparation for the test exactly the same as in Test 1.

Temperature of cellar at start of test...64°

Temperature of cellar at end of hour...60°

Mean average temperature of cellar during test... $64 \times 60$

$$\frac{\quad}{2} = 62^{\circ}$$

Temperature of water in boiler at start of test...44°

Temperature differential...18°

Temperature of water at end of 1 hour...47.25°

Temperature of water at beginning of hour...44°

Temperature of water raised in 1 hour...3.25°

B.t.u.'s absorbed by water in 1 hour... $146.77 \times 1 \times 3.25 = 477.0025$

B.t.u.'s absorbed per sq. ft. of boiler area...477.0025

$$\frac{\quad}{10.99} = 43.40$$

B.t.u.'s transferred to water from cellar atmosphere per hour, per sq. ft. of boiler area, per degree differential in temperature...43.40

$$\frac{\quad}{18} = 2.40$$

# DON'T BE LEFT IN THE DARK



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## SHELL LIQUEFIED PETROLEUM GAS

Test No. 3. Boiler filled with water exactly the same as in tests No. 1 and No. 2, but prior to test, tank was placed on scales and water drawn out of boiler until only 100 lbs. remained. Area of boiler in contact with water was 7.2 sq. ft.

Temperature of cellar at start of test...59°

Temperature of cellar at end of hour...61°

Mean average temperature of cellar during test...59 + 61

$$\frac{2}{2} = 60^{\circ}$$

Temperature of water in boiler at start of test...44°

Temperature differential...16°

Temperature of water at end of hour...47°

Temperature of water at beginning of hour...44°

Temperature of water raised in 1 hour...3°

B.t.u.'s absorbed by water in 1 hour...100 × 1 × 3 = 300

B.t.u.'s absorbed per sq. ft. of tank area...300.00

$$\frac{300.00}{7.2} = 41.66$$

B.t.u.'s transferred to water from cellar atmosphere per hour, per sq. ft. of boiler area, per degree differential in temperature...41.66

$$\frac{41.66}{16} = 2.603$$

*Conclusions drawn from these tests.* It will be noted that the two tests for filled tanks showed a heat transference of 2.35 and 2.40 B.t.u.'s per sq. ft. of tank area in contact with the water per degree temperature differential per hour. This is a difference of only .05 B.t.u.'s and might easily have been due to a slight error in taking any one of eight temperature readings. The partially filled tank showed a

higher transference rate of 2.603, which is a difference of from .203 to .253 B.t.u.'s per hour. This I attribute to conduction of heat through the steel from the unfilled portion of the tank to the filled portion, and this also serves to explain why cylinders with but a pound or two of propane in them continue to vaporize at a rate beyond what one would expect.

While in actual practice we would rarely if ever find a condition of absolute stillness in the atmosphere, it is this one chance in a hundred thousand for which we must be prepared. Furthermore, it is good engineering practice to provide a margin of safety. Taking the lowest heat transference from these tests, or 2.35 B.t.u.'s, and allowing a factor of safety of 15%, we have a transference of 1.9975 B.t.u.'s per hour per degree of temperature differential per sq. ft. of cylinder surface in contact with the liquid, and this is so close to 2 that I have taken this figure in compilation.

Perhaps a further word of explanation is necessary. You will note that there are two sets of figures—one for dry air and one for moist air conditions. The frost which gathers on the exterior of a propane cylinder under conditions of excessive drawing is moisture or water from the atmosphere, and consequently is formed at temperatures of 32° F. when the air is saturated with moisture (relative humidity 100%) and at lower temperatures when the air is only partially saturated with moisture. Fortunately outside humidities are very low in the winter time so that

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frosting usually takes place at temperatures somewhat below 32° on the average cold, dry day. Also in actual practice frost usually disappears under the influence of circulation of the atmosphere. This is for the reason that the circulating air has not picked up its full possible moisture content. You have seen examples of this when in sub-zero weather ice and snow have disappeared under the influence of winds. Contrary to general opinion, ice is a good insulator and therefore would interfere with the normal rate of heat transfer. (See Table 13.)

*How to make practical use of the foregoing tables.* It is a bitter cold night. Out on the state road is "Bill Jones' Diner." He buys propane from you, but has not ordered for several days. Bill's load calls for a maximum draw of 3 lbs. per hour, and you estimate that he has 10 lbs. left in each of a battery of 3 cylinders. Probably the thermometer will go down to 40° below zero tonight. Will Bill be able to get through the night without any difficulty?

If Bill's load is 3 lbs. per hour, this means that each cylinder must be able to vaporize 1 lb. per hour. You first consult Table 12. Under the 40° below zero column you follow down until you get the nearest reading to 10 lbs. which happens to be 11.38. The filled height for 11.38 lbs. at 40° below zero is 5 in. Now you consult Table 13. You follow the 5 in. "filled height" line over to the nearest temperature to 40 below zero—which happens to be 38.1° below zero. Bill's cylinders will only vaporize .283 lbs. each

and they should vaporize 1 lb.! No, Bill's system *won't* carry him through the night without trouble. Those bottles should have at least a filled height of 27 in. which (going back to Table 12) calls for 87.49 lbs. in them. One of two things is necessary—either you will have to fill Bill's present system up to the proper amount or you will have to hook more cylinders into Bill's battery installation in order to give him gas.

*An approximate method of telling how much propane there is in a cylinder.* If heat is being drawn from that portion of the cylinder in contact with liquid propane, then that portion of the cylinder will be colder than the portion of the cylinder above it. This explains the presence of frost lines on the exterior of a cylinder under heavy "draw" but such a frost line is not absolutely reliable because of the metal's conductivity and the tendency of the frost line to creep above the liquid level. One can tell, however, with a fair degree of accuracy how much liquid propane remains in a cylinder under draft by subjecting it to a large load, and while this load is on, pour water down over the side of the cylinder. If the cylinder does not actually frost there will be a noticeable line of demarcation in the globules of water on the cylinder at the level of the liquid propane within. Note what the temperature of the air is, then follow down in that column in Table 12 until you come to the "filled height" line corresponding to the line of demarcation distance from the ground. This will give you the approxi-



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## FOR LPG TANK CAR UNLOADING AND BOTTLE FILLING



Brunner LP-Gas Unit, 4 cylinders, 5 h. p. with suction and discharge valves in valve plate.

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These sturdy Brunner units lick the tough problem of reducing gas

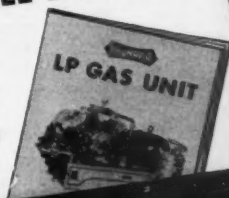
loss by recovering 500 to 1000 lbs. per tank car unloaded. They also reduce bottle filling time by as much as 25%. These savings alone soon liquidate the cost of the original investment. Brunner Manufacturing Co., Utica, N. Y., U. S. A.

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- This booklet describes the new Brunner LP-Gas Unit. Contains illustrations, diagrams and other pertinent facts on handling liquefied petroleum gas.



mate number of pounds in the cylinder.

*How much gas remains in an empty cylinder?* In our next session together we will begin a discussion of regulators. At this time it is enough to say that regulators are designed so that pressure *closes* the valves in them; hence, as pressure drops below certain levels the valves open, and a cylinder is free to exhaust itself down to atmospheric pressure. If an automatic regulator of the pressure differential type is left to itself it will shift back and forth until the bottles upon it are almost entirely exhausted. Many automatic regulators are set to shift onto reserve when the pressure drops below 5 lbs., and in some instances the cylinders are "yanked" from the system when the first shift-over occurs. This is done by some operators, and has given rise to a criticism on the part of some operators who do not use automatic systems.

For a moment we must return to Boyle's law as, stated in Chapter 2,

"At a constant temperature the volume of a given mass of gas varies inversely as the pressure sustained by it."

Here is our old formula again:

$$PV = P'V'$$

In this instance:

$P = 5 \text{ lbs. plus } 14.7 \text{ lbs.} = 19.7 \text{ lbs. absolute pressure.}$

$V = \text{the internal volume of the cylinder which is approximately } 3.74 \text{ cu. ft.}$

$P' = \text{the pressure of the atmosphere, or } 14.7 \text{ lbs.}$

$V' = \text{the volume at atmospheric pressure that } 3.74 \text{ cu. ft. of gas under } 19.7 \text{ lbs. absolute pressure would be.}$

Substituting values we have:

$$(19.7)(3.74) = 14.7V'$$

$$14.7V' = 73.678$$

$$V' = 5.01 \text{ cu. ft.}$$

But wait a minute! When we get down to atmospheric pressure there is always 3.74 cu. ft. of gas left in the cylinder, and when it is filled the weight that we get is over and above the weight of this 3.74 cu. ft. so by "yanking" a cylinder at 5 lbs. pressure we only lose 5.01

**TABLE 14. VALUE OF GAS LEFT IN CYLINDER AT 5 LBS. GAGE PRESSURE, 62° F.**

<i>Price Propane Per Pound Cents</i>	<i>Value in Cents Gas Left in Cylinder</i>	<i>Price Propane Per Pound Cents</i>	<i>Value in Cents Gas Left in Cylinder</i>
2	.294	7.5	1.1025
2.5	.3675	8.0	1.176
3.0	.441	8.5	1.2495
3.5	.5145	9.0	1.323
4.0	.5880	9.5	1.3965
4.5	.6615	10.0	1.47
5.0	.735	10.5	1.5435
5.5	.8085	11.0	1.617
6.0	.8820	11.5	1.6905
6.5	.9555	12.0	1.764
7.0	1.029		

# Alcazar **BUTANE RANGE**

*Bakes  
at 2 different  
Temperatures  
at the  
Same Time!*



BAKING two different foods simultaneously, with a temperature differential of 100 degrees—that is just one of the many features that appeals to the housewife who has considered baking an extravagant use of fuel.

Alcazar Butane Ranges have sufficient exclusive features that they move rapidly from the dealer's floor. They represent an excellent value for the price, and that's important in suburban and rural communities. We are the distributors for California, Washington, Oregon, Nevada, and Idaho. Dealer inquiries are invited.

## **RANSOME COMPANY**

*Designing and Constructing Engineers*

**4030 HOLLIS STREET • EMERYVILLE, CALIFORNIA**

*Ransome*

OCTOBER-1941

59

$-3.74 = 1.27$  cu. ft. of gas which, converted into pounds, is 1.2700 cu. ft. divided by 8.588 cu. ft. to the pound = .147 lbs.! Table 14 shows values of gas left in a cylinder at 5 lbs. gage pressure.

Let us suppose that the user is paying 12 cents per lb. and using 100 cylinders per year. The total cost of all fuel left in the cylinders at a 5 lb. vapor pressure would be only \$1.76. It is cheap, indeed, for the service rendered and the comforts enjoyed.

Our simple little propane cylinder has turned out to have quite an interesting existence. As it stands quietly by the side of the house doing its appointed task who would guess that it could tell us such a fascinating story?

We've but started delving into this industry of ours. Let's digest that which we have already read before our next evening together. To that end, examine the questions below, and check yourself with the answers on Page 122.

#### Questions on Chapter 4.

1. What precautionary devices are installed upon propane cylinders?
2. What is the reason that propane cylinders are not entirely filled?
3. What is the governing factor of vaporization in a propane cylinder?
4. What four variables determine this factor?
5. How many cylinders should be installed on each side of a regulator in a system that is required to furnish  $\frac{1}{2}$  lb. per hour at  $-8.1^{\circ}$  F.?
6. If the line of demarcation is

12 in. from the ground and the temperature is  $-40^{\circ}$  F. how many pounds of liquid propane are there in a standard 100-lb. cylinder?

7. At what approximate temperature Fahrenheit would water boil at 20,000 ft. above sea level?

8. What is meant by "Point of Equilibrium?"

9. If the area of a cylinder in contact with liquid propane is 12 sq. ft. and the temperature of the air is  $90^{\circ}$  F., how many B.t.u.'s could be safely counted upon for vaporization?

10. How many pounds of liquid propane would this vaporize in an hour?

(Chapter 5 of THE BOTTLED GAS MANUAL will appear in the November issue, BUTANE-PROPANE News.)



#### Frederick W. Robertshaw, Thermostat Inventor, Dies

Frederick W. Robertshaw, 84, founder of the Robertshaw Thermostat Co., Pittsburgh, Pa., retired inventor and industrialist, died August 24. A native of Kentucky, Mr. Robertshaw worked for several brass-making firms gaining mechanical and technical knowledge which later enabled him to invent the thermostat which was originally applied to water heaters. He invented the thermostat as a labor-saving device for his wife in 1899. In a few years many people in his neighborhood had heard about his invention and wanted duplicates.

In 1914 he moved his plant to Youngwood, Pa. Twenty-eight persons were originally employed by his company whose present personnel totals 2300. The company controls and operates the Grayson Heat Control, Ltd., in Lynwood, Calif., and the American Thermometer Co., in St. Louis, Mo. Mr. Robertshaw retired from the presidency in 1928.

# SINCLAIR LP-Gas

Is Doing Its Part in

## National Defense



For heat treating, case hardening and forging the bearings and shafts of a great battleship in an American shipyard, and heating the homes of thousands of defense industry workers, the same finest quality Sinclair LP-Gas is used. . . . There is only one quality Sinclair LP-Gas—the best.

Sinclair LP-Gas is produced by a company that has attained the reputation of national leadership in the petroleum field. Sinclair Butane-Propane gases are scientifically manufactured by experienced men in strictly modern plants. Sinclair Liquefied Petroleum gases are sold only to wholesale buyers.

*For a dependable supply call*

**Sinclair Building**

**Tulsa, Oklahoma**

## SINCLAIR PRAIRIE OIL COMPANY

## Cut Prices And See What Happens

**I**T is often so easy to offer a customer "just a little lower or a very special price" in order to close a sale. It takes less effort than to prove superiority of value. Unfortunately, this gets to be a habit and when it gets to be a habit the dealer suddenly discovers that he has made no money.

Suppose you, as an appliance dealer, found yourselves in this position, and being very alert to your profit situation, you would subject your condition to critical examination. Here is what you would discover:

On a normal 40% margin, when you cut a price 20%, you have to sell twice as big a volume in order to make your normal amount of profit! This rapidly increasing scale of volume needed to offset price reductions is an important consideration when you contemplate such a move.

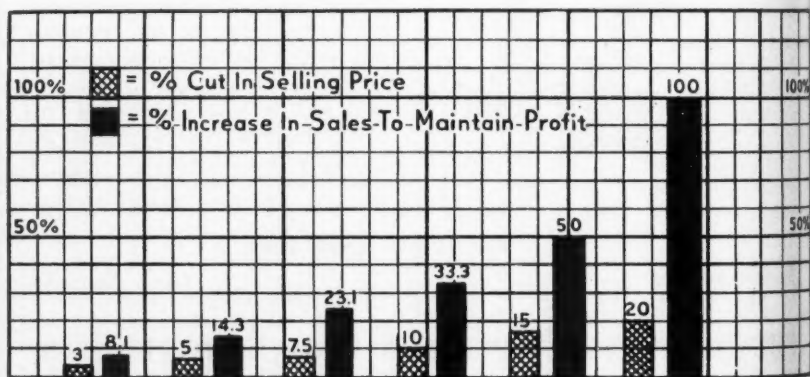
For example, let us say that you have an appliance that regularly lists at \$100, which you buy at a 40% discount. Suppose you cut the price 10%. Here's what happens:

List Price .....	\$100
Reduction .....	10
Sale Price .....	90
Cost .....	60
Gross Profit .....	\$ 30

The point is—to make your normal profit of \$40 on this merchandise at the reduced price means that your sales must increase to \$133.33. You have cut your profit rate to 30%, and 30% of \$133.33 is \$40.00.

Notice in the accompanying chart how rapidly the volume advances which is necessary to offset the comparatively slight increases in reductions allowed. This relationship between cut prices and volume should be carefully considered in order to maintain adequate gross profit margins. Otherwise, the net may shrink to such an extent that the operation may be unprofitable.

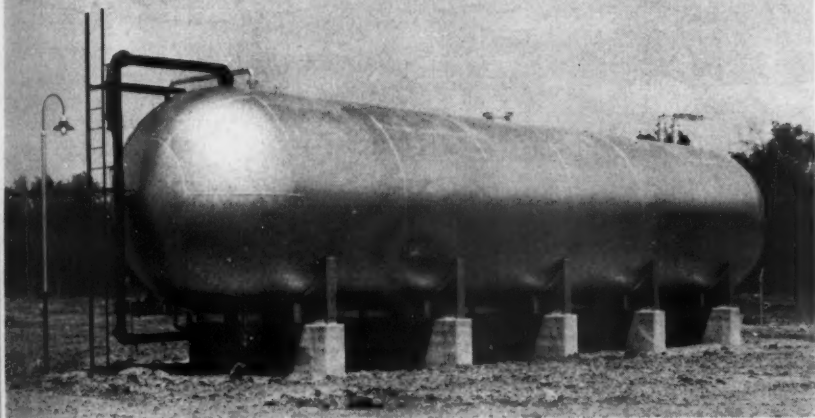
—Reprinted from *The Big Four*



Study this chart, as it may mean money to you.



# Modern Butane Storage



Pictured above is a WYATT fabricated API-ASME Code Butane storage tank (12' x 50') Ex-rayed and stress relieved. WYATT bulk storage tanks, underground systems for commercial and domestic use, skid tanks and truck tanks are in satisfactory service throughout the country.

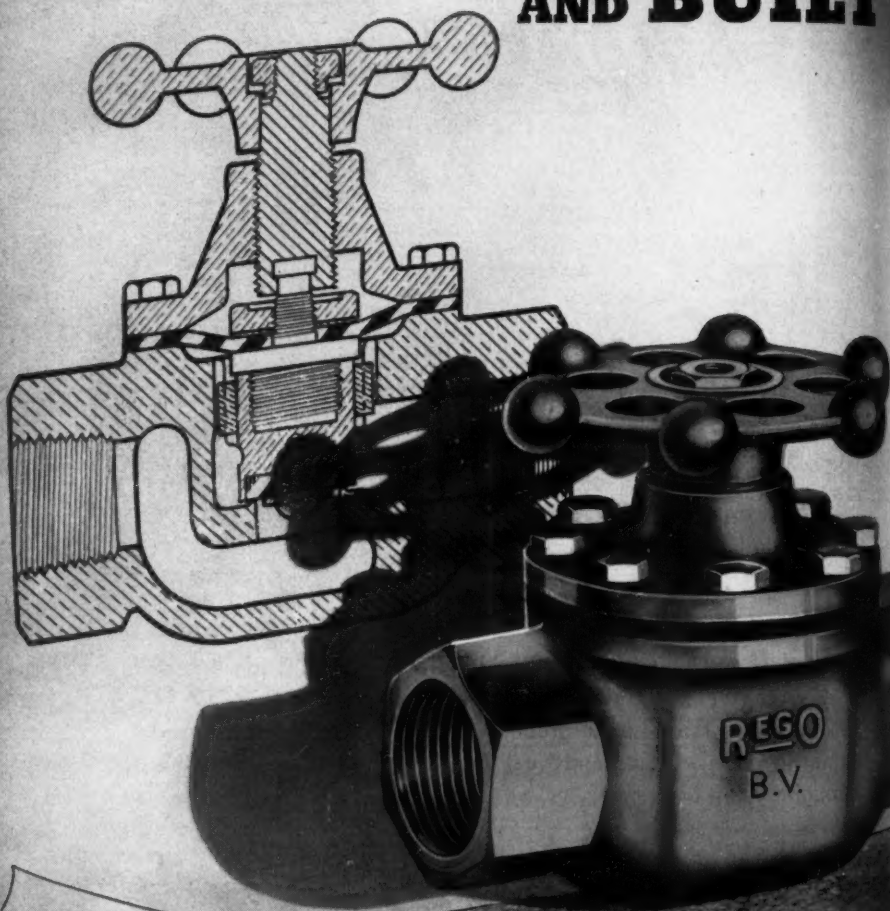
Precision  
Fabricators  
and Erectors  
for more than  
a quarter of  
a century.

# Wyatt's

WYATT METAL & BOILER WORKS

HOUSTON AND DALLAS, TEXAS

**DESIGNED  
AND BUILT**



**REGO**  
**SHUT-OFF VALVES**

REGO  
LAP  
GAS  
SYSTEM

*Life-Quick Action*

RegO Shut-Off Valves are giving efficient and satisfactory service in butane-propane bulk storage plants, in cylinder charging stations, on tank trucks, etc. They provide large capacity, quick opening and closing, as well as safe and dependable operation over many years. Their added cost is soon repaid by the elimination of hazardous, costly leaks. Here are some RegO features:

- **LEAK-PROOF DIAPHRAGMS** — Exclusive design incorporates packless diaphragms of flexible composition assuring a lifetime of leakproof operation and allowing for unrestricted movement of valve disc.
- **POSITIVE FULL OPENING** — Valve disc is positioned mechanically. There is no dependence on springs to effect opening.
- **TIGHT CLOSING** — Seat disc of resilient composition assures positive shut-off.
- **STURDY CONSTRUCTION** — Bodies are forged brass or cast bronze — depending on the size of the valve.
- **CAREFULLY SELECTED MATERIALS** — All materials in these valves resist the action of butane and propane in both the liquid and gaseous phases.
- **EASILY MAINTAINED** — All parts subject to wear or fatigue can be replaced easily.

**SPECIFY REGO LP GAS EQUIPMENT**



Listed and Approved by Underwriters' Laboratories

*The* **BASTIAN-BLESSING** Co.

4201 Peterson Ave.

Chicago, Ill.

Pioneers in equipment for using and controlling high pressure gases.

# Sell Comfort and Luxury!

By S. W. ELLIS

**O**NE butane gas system sold each week, month after month, throughout the year, is the record enjoyed by the Saline Hardware & Furniture Co., Benton, Ark. But this fine volume does not end with the gas system. Not once has a system been sold to date without a new range. The average sale is \$250. Sometimes it is closer to \$500, for the farmers in Saline county want all the modern appliances that go with bottled gas.

A butane tank is featured in the window all the time. The dealer's trucks carry a brightly painted sign that is practically a traveling outdoor sign.

"We don't just sell bottled gas," said D. J. Stirmon, manager. "We sell comfort and luxury. Our rural customers are buying appliances they thought forever beyond their attainment because rural electricity

had not reached their community. These customers are now buying the finer gas ranges, water heaters and room heaters. A lot of them increase our volume by buying water systems from us and the plumbing fixtures that go with running water. After they once get butane gas they want hot water, which leads to all the luxury plumbing fixtures."

This dealer, to date, is enjoying the extra \$250 to \$500 gross volume each week added by butane gas without having increased his sales staff in any way. Butane is sold during the spare time of Mr. Stirmon and Virgil Moore, a salesman. Many of the prospects develop in the store, attracted by the butane window display. Some of them come



A butane gas system displayed in the window of the Saline Hardware & Furniture Co. attracts many prospects.

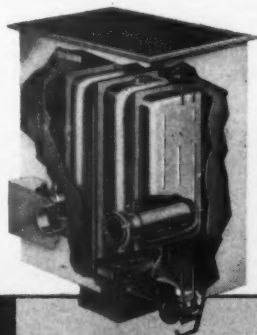
# WHEN THE "JEEP" HAD THREE WHEELS



—And even before World War I, Payne was famous for gas heating...and has led in L. P. G. since 1928.

Again an active supplier for the U. S. armed forces, PAYNE has in the past few months equipped 29 cantonments and bases throughout the Nation with reliable gas heating equipment.

☆ Time-proven . . . double-tested . . . custom adjusted, PAYNE's 69 styles and sizes permit you to fit any heating need exactly. ☆ Dealers: for further information, write J. H. Keber, Sales Manager. Please mention this advertisement.



**PAYNE FLOOR FURNACE** — One of the "versatile 69" styles and sizes of gas heating equipment, most models of which are specifically adapted for L.P.G.

## PAYNEHEAT

MORE THAN A QUARTER-CENTURY OF



SPECIALIZATION

Payne Furnace & Supply Co., Inc., Beverly Hills, California

in after having seen a butane system in a neighbor's home.

When a system is once sold in a community, others always follow. Mr. Stirmon estimates that each system helps to sell three or four others. He and Mr. Moore use their spare time in canvassing the more prosperous farmers in communities where butane is being used by one or more people. They load the truck with a three-gallon demonstrator tank and a new gas range. And they practically never return to the store without having set up the demonstrator in some farmer's kitchen, where it remains for three or four days, until the gas in the demonstrator is used. In the large majority of demonstrations the deal is closed. After farmers once learn the utility and economy of butane they are completely sold.

Most of the sales for gas systems are made on the F.H.A. plan, which influences larger initial sales, to include several appliances.

"We look upon our bottled gas customers as the most valuable to

us," said Mr. Stirmon. "Bottled gas makes them more interested in acquiring the better things. Thus butane gas is increasing volume in practically every department in our store. It brings a higher standard of living to the farm home and actually inspires the farmer to extra industry and thrift."

"We hardly realize the possibilities ourselves," he said. "When we first added butane we hoped to increase our volume by maybe a few hundred dollars annually. But after we got into it and began using aggressive sales efforts with our limited sales force, what we accomplished astonished us. Now we know we've been missing a lot of business by not having added butane long ago."

This firm has been handling L.P. Gas for about five months. So sure are they of a large volume throughout the winter that they have laid plans, months in advance, for an aggressive drive on gas heaters.

"We'll put it over, too," said Mr. Stirmon with confidence.



Virgil Moore, salesman for the Saline Hardware & Furniture Co., wins a butane range convert in a farmer customer.



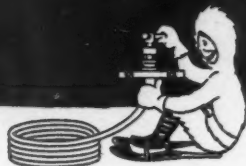
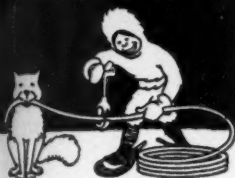
Take the "Stall" out of In-Stall-ations  
with

# Anaconda Copper Tubes

EASY TO BEND

EASY TO CUT

EASY TO FLARE



Anaconda Copper Tubes can be cut, reamed or bent by any of the usual methods, and flared without cracking because a closely controlled annealing process makes them uniformly soft throughout.

Besides that, they feature clean, smooth inside surfaces, accuracy in size and shape and complete freedom from defects.

So remember to make it an Anaconda job for efficient, durable bottled gas service. You can get Anaconda Copper Tubes through distributors everywhere. Soft 50 ft. coils facilitate installation, minimize waste and cut down the number of fittings.

Anaconda Flared Tube Fittings are made of cast bronze, in sizes from  $\frac{1}{8}$ " to 2" inclusive. Cast bronze and wrought copper solder type fittings from  $\frac{1}{4}$ " to 4" inclusive are also available.

4122



## Anaconda Copper Tubes

THE AMERICAN BRASS COMPANY

General Offices: Waterbury, Conn.

In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.

Subsidiary of Anaconda Copper Mining Co.

# Near You-All



Cleveland, O.  
St. Louis, Mo.  
St. Paul, Minn.  
Buffalo, N. Y.  
Kansas City, Mo.  
Albany, N. Y.  
Dallas, Tex.  
Memphis, Tenn.  
Norfolk, Va.  
San Antonio, Tex.  
Rochester, N. Y.

Omaha, Neb.  
Syracuse, N. Y.  
Miami, Fla.  
Oklahoma City, Okla.  
Grand Rapids, Mich.  
Des Moines, Ia.  
Davenport, Ia.  
Harrisburg, Pa.  
Lancaster, Pa.  
Binghamton, N. Y.  
San Francisco, Calif.

Charlotte, N. C.  
Erie, Pa.  
Little Rock, Ark.  
Phoenix, Ariz.  
El Paso, Tex.  
Charleston, W. V.  
Orlando, Fla.  
Dodge City, Kan.  
Mexico City, Mex.  
Monterrey, Mex.  
Detroit, Mich.

In 30 cities Grand Distributing Points neatly sub-  
divide the map of the United States (and Mexico)  
into convenient, easily reached segments.

THE CLEVELAND CO-OPERATIVE STOVE CO.  
2323 E. 67th St., Dept. B10, Cleveland, Ohio

Please send me full information on the New Grand  
Gas Ranges.

Firm Name \_\_\_\_\_

By \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

# U-Always...

## Grand Distributing Points

Are Conveniently Located  
To Give You Better Service

Throughout the nation's vast L. P. gas territories (and beyond, into Mexico), distributors of Grand Gas Ranges literally blanket the market. No matter where you are located, one of these thirty active, distributing centers is within easy reach . . . ready and willing to be of service . . . making it economical and convenient, as well as highly profitable, to handle Grand's fine line of L. P. Gas Ranges.



Of Special Interest To  
L. P. Gas Dealers . . .

**GRAND'S EXCLUSIVE  
SAFE-TEE-KEE**

Safeguards the Family and Home

Answers a long-felt safety need of every woman with children in her home. No accidental lighting! No gas leakage! The SAFE-TEE-KEE locks the gas supply, not the burners.

CLEVELAND CO-OPERATIVE STOVE

*Company*  
CLEVELAND

# **ENSIGN**

**BUTANE CARBURETION  
FOR TRUCKS, TRACTORS, BUSES  
AND STATIONARY ENGINES**

**PROVIDES CORRECT  
GAS-AIR MIXTURES  
AUTOMATICALLY FOR  
EVERY LOAD AND SPEED**

# **ENSIGN**

**ACCEPTED STANDARD AMONG LARGEST  
OPERATORS FROM COAST TO COAST**

**Butane, when properly carburetted is the  
finest of motor fuels. Ensign Carburetion  
Equipment is accurately designed to meet  
every engine need with extra perform-  
ance in power and economy of operation.**

● **Write us for complete information. Our com-  
petent engineering staff is at your service.**

**ENSIGN CARBURETOR CO., LTD.**  
**HUNTINGTON PARK, CALIF. • DALLAS, TEX. • CHICAGO, ILL.**

Super  
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OC

# BUTANE *Power*

## **Super-Service Butane Station To Locate in Jackson, Calif.**

The recently completed super-streamlined service station at the corner of Sutter and Hoffman streets in Jackson, Calif., will enter the butane field in the near future, according to an announcement made by Ed Wise, manager.

One of the most modern stations of its type in the state, the structure covers 4000 sq. ft. of space and represents an investment of \$10,000.

## **Butane Gas, Inc., Serves Seven Saw Mills in Louisiana**

Butane Gas, Inc., Woodworth, La., is now furnishing butane to power seven saw mills in that area. Some of these mills, which consume about three gallons of butane per hour and cut an average of 1500 feet per hour,

are in operation 24 hours a day. A photo of a typical set-up is shown on this page.

The company furnishes skid tanks for these installations with a capacity of 500 gals. Operators of the mills say that butane is the cheapest operating fuel on the market for their purpose. The company also serves LP-Gas for drag lines and sand pumps in that territory.

## **Edward Brewster Purchases Station in Spokane, Wash.**

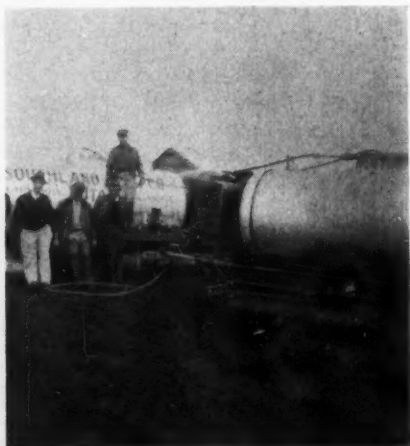
Edward Brewster, associated with the Butane Gas Corp. for the past year, has purchased the equipment and service station formerly owned by Al Husom at the corner of Third and Jefferson in Spokane, Wash., according to news reports. Butane gas will be served to trucks.

Butane Gas, Inc., of Woodworth, La., has made the butane installation for this saw mill which cuts an average of 1500 ft. per hr.



## Butane For Drilling Relayed By Tractor

Southland Gas Co., Inc., Cary, Miss., was recently forced to work out an unusual arrangement for supplying butane to a drilling rig situated three miles from a main



Temporary storage tank, skid tank, tractor and equipment used in Mississippi drilling operations, for which LP-Gas is provided by the Southland Gas Co., Inc., Cary, Miss.

highway, according to Jack Grundfest, president of the company.

The only way to get butane to the test well, because of bad roads, was by using tractors, so an agreement was made with the drilling company whereby this company bought a 1000-gal. tank and pump and hauled their own gas with tractors from the highway to the rig. At the rig, the tank was emptied into a 3000-gal. storage tank and then sent back to the highway where a Southland Gas Co. truck was waiting with the next load.

Another unusual activity of this company is the metering of butane gas to several customers in the same block. Mr. Grundfest says, "In several small towns we had blocks of stores and restaurants that wanted butane gas. We have now worked out an underground system by which we can meter the gas to each individual user. In some instances we use 25-cent pre-pay meters.

The main office of the company is in Cary, Miss., but the bulk storage tank of 18,000-gal. capacity is located in Hollandale, Miss. Four delivery trucks and one service truck are used by the company. J. J. Yeager is service man for the firm.



### Butane-Fueled Tractor Joins Parade at Oklahoma Fair

One of the attractions in the Carnegie Day parade of the Tri-County fair held in Carnegie, Okla., was a large tractor equipped to burn butane gas, owned by Truitt Brothers, butane dealers of that community.

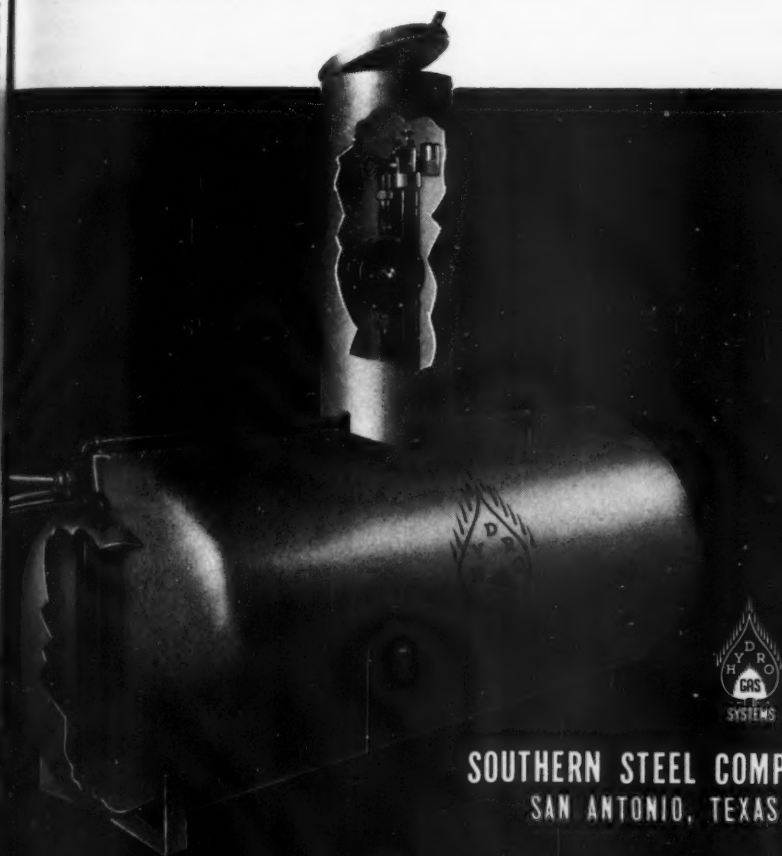
The tractor has been used to pull a three-bottom plow for the past three weeks.



Every

# HYDROGAS SYSTEM

has exclusively patented features that makes this the pioneer underground unit, the most efficient of all liquefied petroleum gas systems. Two such features are the patented Vaporizer and the Re-Vaporizer, which recovers heat losses and re-vaporizes any condensation in the service line. This is especially appreciated during the winter season when a dependable gas supply is so important to successful appliance operation.



**SOUTHERN STEEL COMPANY**  
SAN ANTONIO, TEXAS

## Grading Equipment Operates on Butane

**F**OUR pieces of grading equipment which were used during May, June, July and part of August, in preliminary construction of Oklahoma City, Okla., municipal airport No. 2, about 10 miles northwest of the city, made an enviable record for low fuel operating costs. Phillips Petroleum Co.'s Philgas was furnished by the American Butane Gas Co., of Oklahoma City.

Figures compiled in the office of Fred R. Heman, resident engineer for the \$1,600,000 project, and furnished by Wm. J. Strah, show the following comparative costs per hour for butane and gasoline, including oil and grease:

Two 80-hp. tractors, operated on butane, 89 cents per hour each. The same type of equipment, also 80-hp., operated on gasoline, each registered fuel costs of \$1.34 per hour while on this job.

Two 50-hp. Euclid wagons, used for hauling dirt in the grading work, were run with fuel costs of 67 cents per hour each, on butane, while operation of other Euclid wagons of similar capacities and horsepower with gasoline, cost 84 cents per hour for fuel. Mechanics at the contractor's field garage did not keep separate figures on comparative maintenance costs of equipment utilizing different fuels. They estimated, however, that maintenance costs were about the same on the particular equipment used in the grading operations.

Had a larger proportion of the



**This 50-hp., Euclid wagon, operating on butane gas, made scores of trips daily while hauling dirt in grading operations on Oklahoma City's new municipal airport No. 2.**

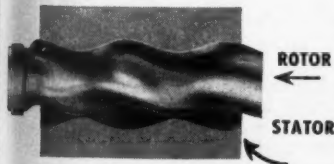
# Speed BUTANE-PROPANE Handling with R & M MOYNO PUMP



This R & M Moyno truck-tank pump has filled thousands of cylinders for customers of the Southern Indiana Liquefied Gas Co., Vevay, Ind. "We chose the Moyno Pump," says Paul Ogle, owner, "because of its simplicity of design, convenience of installation and the splendid recommendation of other users. It is giving very satisfactory service."

Make your truck tank a butane-propane "oil well" on wheels with the new R & M Moyno Pump. It is valveless, self-priming, positive in displacement, delivering a uniform flow into cylinders or underground storage tanks . . . without turbulence or vapor lock. It's easily mounted on truck chassis, weighs slightly more than 100 lbs.

Investigate this remarkable new pump today. Let an R & M expert show you the savings you can make by handling butane and propane safely and efficiently—from your tank truck or in your bulk plant—with the R & M Moyno. Write for descriptive folder and prices, specifying whether you handle butane or propane or both.



## ONLY TWO PUMPING PARTS

Here's the secret of Moyno Pump efficiency. A helical rotor revolves within a helical-threaded stator with action like that of a piston moving through a cylinder of infinite length. No valves or pistons to stick, leak, clog or wear out.

# ROBBINS & MYERS, Inc.

MOYNO PUMP DIVISION



SPRINGFIELD, OHIO

**1** Right on your lines, there are plenty of people who are ready to hear the story of the Gas Refrigerator . . . because they're already sold on this modern, efficient fuel. Even the "coldest" prospect will begin to spark when you tell him that Servel Electrolux is the only automatic refrigerator that freezes with no moving parts.



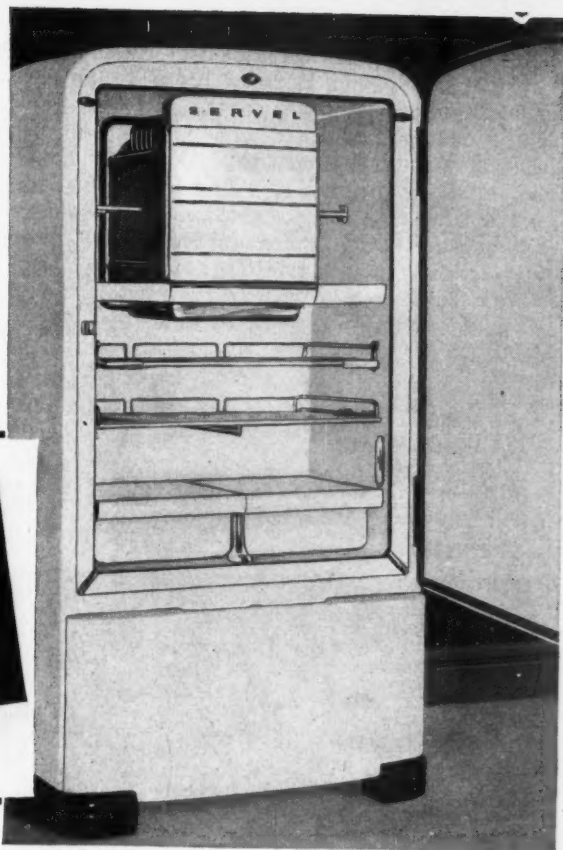
## Every L.P.G. Customer is a Gas Refrigerator Prospect



**2** It's easy to show the superiority of Servel's freezing system. For Servel, alone, assures permanent silence, continued low operating cost, freedom from costly wear, and long dependable life. Moreover, its modern beauty, wide adaptability and the fact that it pays for itself in savings . . . all combine to make Servel's story a powerful one!

3 And, remember . . . you stand to make more from selling Servels than an immediate profit. Every time a Gas Refrigerator is installed, you're paving the way toward future profits . . . by protecting and increasing your present gas load . . . and by quickening the customer's interest in other L. P. Gas appliances. It's no wonder so many L.P.G. dealers are pushing the refrigerator that "Stays Silent . . . Lasts Longer."

**SERVEL**  
ELECTROLUX  
**GAS**  
REFRIGERATOR



## *Gas Refrigeration Will Help You:*

- ▶ PROTECT YOUR PRESENT L. P. GAS LOAD
- ▶ BUILD NEW L. P. GAS LOAD
- ▶ STIMULATE THE SALE OF OTHER L. P. GAS APPLIANCES
- ▶ PUBLICIZE THE MODERNITY OF L. P. GAS

grading machinery been converted for use of LP-Gas still greater comparative savings could have been made. Suppliers of butane could not afford, at the low cost at which the fuel was furnished, to make frequent trips through soft dirt to the site of the grading operations. The butane-fueled tractors and Euclid wagons, instead, were run to the garage, near the south edge of the field for filling, which added slightly to the total operating costs of this equipment and should be figured in comparison.

Having a much larger number

of machines to fuel, the gasoline and oil truck drivers were able to make trips to the scene of grading operations twice each day. However, at no time, were the butane machines without fuel and they operated as effectively as any other equipment on the job and possibly with higher efficiency.

In view of the pronounced savings in fuel costs, the grading and drainage contractors, represented by W. H. Green, superintendent, expressed satisfaction with the butane equipment, and its general performance day by day.



Coincident to the opening of the new plant of Automatic Gas Co., Tyler, Texas, during the early summer, L. D. Wittkower, district representative of Geo. D. Roper Corp., gave a demonstration of the Roper range to Automatic sales and service staffs.



# CLOW GASTEAM RADIATORS

combine the **SUPERIORITY** of radiator heating  
the **FLEXIBILITY** of individual heaters  
the **CONVENIENCE** of butane gas

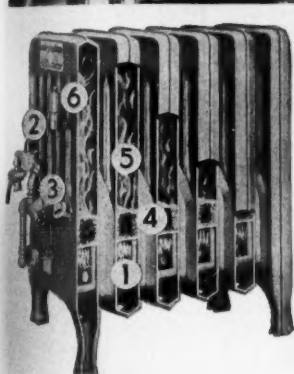


LAKEVIEW COTTAGES—NICHOLASVILLE, KY.

★ ★ ★

**Owner Miss Betty Hulett says:**

"Clow Gasteam radiators were installed in my court more than a year ago. They have been so satisfactory with the tourists that many of them have written me to get the address of the manufacturers. In my opinion, Clow Gasteam radiators are the ideal heating system for tourist courts."



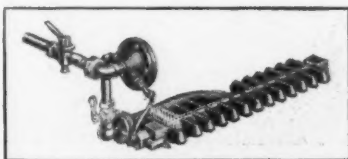
## OPERATING PRINCIPLE of Gasteam Radiators

1. Gas burner completely enclosed in a combustion chamber in the bottom portion of the radiator sections.
2. Cut-off valve that closes automatically if the pilot gas is not burning.
3. Steam regulator that automatically controls the size of the gas flame to maintain uniform heat in the radiator.
4. Boiling water that is heated from the gas flames below it and which supplies the steam to the radiator sections.
5. Steam rising in the radiator sections and evenly heating all portions of the radiator.
6. Air valve that automatically allows air in the radiator to escape, but holds back steam.

## AUTOMATIC SAFETY (cut-off) VALVE

The automatic cut-off valve shuts off all gas flow when pilot flame is extinguished from any cause, and is standard for L. P. gas.

**ROOM THERMOSTATS** For complete heating, or for unusually close room temperature regulation, two types of thermostats are available—(1) the non-electrical combined type, and (2) the remote electrical type.



**The 2-Way Burner** combining pilot and main burner in a single casting insures prompt ignition of the main burner gas from pilot flame.

**For further information, write**

**James B. Clow & Sons**

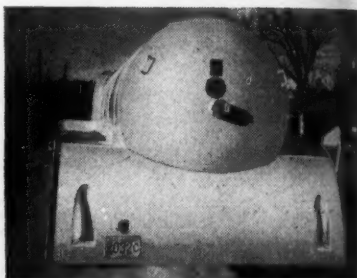
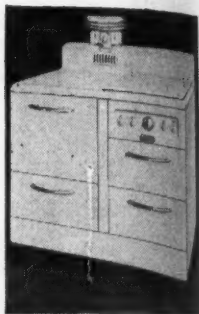
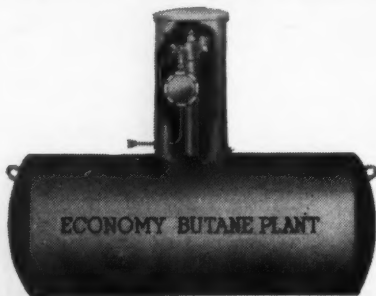
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Write or wire today for descriptive folder and complete information. Your message will receive prompt attention!

**DALLAS AND TANK**  
**WELDING COMPANY, INC.**  
201-5 W. COMMERCE ST. DALLAS, TEXAS

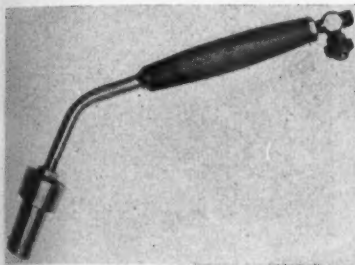
# PRODUCTS

## Hand Torch

F. & E. Manufacturing Co., Centerville, Calif.

Model: No. 35.

**Description:** This torch, used with LP-Gas, requires no pre-heating; lights instantly with a match and stays lighted in wind or draft. Efficient and economical for use with solder or sweat type copper fittings and pipe, and develops a flame temperature of approximate-



ly 2250° F. Used for melting out lead joints, paint burning, preheating, soldering, general heating work, lead wiping, electrical work, etc. For fittings from 1-3 in.

## Dust Filter

Reliance Regulator Corp., 1000 Meridian Ave., Alhambra, Calif.

Model: Type "C".

**Description:** For removing dust from large volumes of gas on distribution lines and in industrial service. This new Type "C" dust filter has been announced. It is equipped with nine filtering elements that are easily accessible for cleaning or replacement. Made in two sizes,



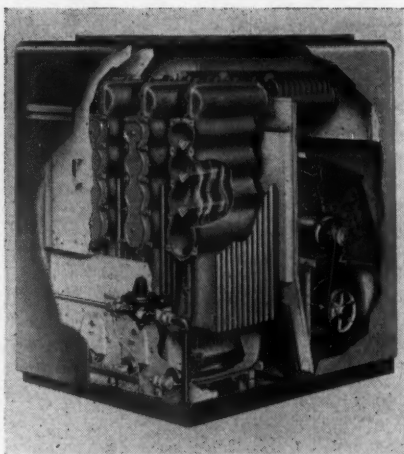
1½ in. and 2 in. pipe connections. These filters are made to operate effectively with low pressure loss and within a wide range of capacities depending on the pressure differentials. Designed for inlet pressures to 150 lbs. per sq. in.

## Furnace

American Radiator & Standard Sanitary Corp., Pittsburgh, Pa.

Model: Mohawk Gas-Fired Winter Air Conditioner.

**Description:** A completely automatic unit with inputs ranging from 60,000 to 300,000 B.t.u. per hr. designed to cover all sizes of installations. Heating element is built of durable cast iron, each element is made in two sections. The faces of each section are surface ground, packed with asbestos wicking and bolted together at close intervals to form a tight, metal-to-metal joint that is permanent and leak-proof. Feature of the Mohawk is Pre-Heated Air, said to result in a saving of fuel. The return air from



the living quarters is pre-heated before entering the heating compartment. This is done by means of finned radiators or cast iron collars (depending on the size of the unit) which are placed in the return air compartment. These are warmed by the hot gases on the way to the flue. As the return air from the rooms passes over these radiators or collars, it receives a first heating. The burner is made of cast iron with patented high temperature alloy, corrugated ribbons. Burns natural, manufactured, mixed or bottled gas.



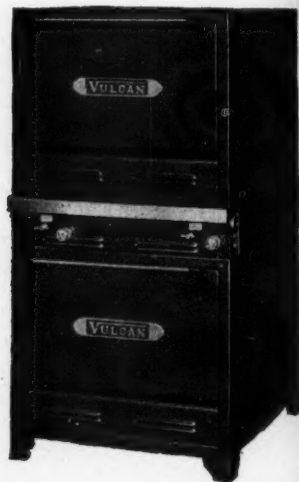
### Commercial Oven

*Standard Gas Equipment Corp., 18 East 41st St., New York, N. Y.*

*Model: Nos. 5799 and 5199.*

*Description:* These new two-deck, two-compartment Vulcan ovens for roasting and baking have a solid shelf and a special heat circulation system for each half of oven, providing two evenly heated compartments, each about 26 x 28 x 6½ in., instead of the conventional open racks. When it is desired to use the ovens for high roasts, solid shelf is removed, and, due to the

quadruple air-insulated oven bottom, it is possible to utilize the entire height of 15 in. of the oven. The interiors of the ovens are coated with porcelain enamel. The insulation is the non-sag type housed in rodent proof metal containers. Each deck is equipped with a separate Robertshaw heat control. No. 5799: 31½ in. wide, 41¼ in. deep, 59½ in. high. Shipping weight,



795 lbs. No. 5199: 31½ in. wide, 35 in. deep, 59½ in. high. Shipping weight, 775 lbs. Ovens are made for use with LP-Gas.

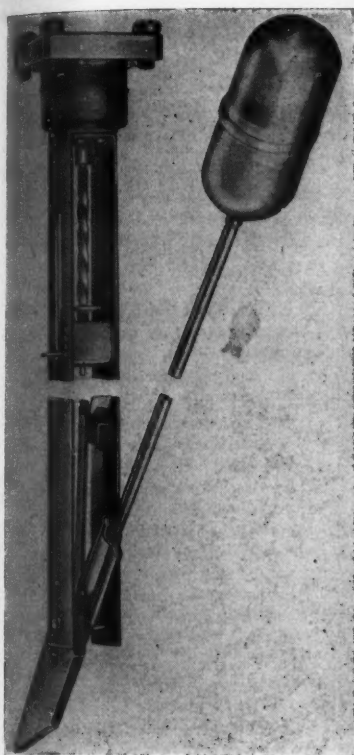


### LP-Gas Gage

*Rochester Manufacturing Co., Rochester, N. Y.*

*Model: No. 3215 Criterion Jr.*

*Description:* This gage is the latest addition to the Rochester line of "Criterion" gages and incorporates the principle of "magnetic operation" for assured accuracy. It embodies a new type of gearless float-arm principle and spiral-turning magnet shaft which gives positive



operation under all conditions. It uses a precisely balanced metal float especially designed for use in low specific gravity liquids and in tanks of varying pressures.

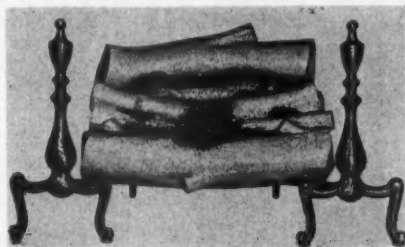
### Gas Log Cluster

The Ohio Foundry & Manufacturing Co., Steubenville, Ohio.

Model: No. 6-B.

*Description:* This model can be furnished in either birch or oak logs in an artistic cluster. Made of glazed refractory material. Fitted with cast iron burner, flames playing up in center of cluster. Equipped with illuminating device and shadow spinner. The No 6-B log includes, besides the gas burner,

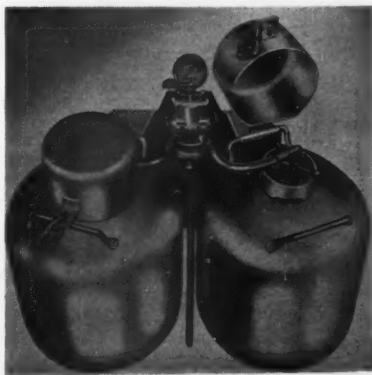
a red electric light which casts a warm glow throughout the back of the log, giving a very pleasing effect, apparent also when the gas is turned on. The log is A.G.A. approved for LP-Gas.



### Automatic Throwover

The Bastian-Blessing Co., 242 East Ontario St., Chicago, Ill.

*Description:* The new "Rego" automatic throwover regulator outfits are designed for a unit of this type for "cash-and-carry" systems. When the service cylinder is empty, the outfit automatically switches to the reserve cylinder, giving uninterrupted service. These outfits can be had with direct connected gage or with remote gage for installing in a convenient spot for easy reference; and with or without the combination support and hood assembly.



*Sell*  
"COOKING  
AT ITS BEST..."



**FLORENCE**  
*Gas Ranges*

**FOR LIQUEFIED  
PETROLEUM GAS**

◀ **THAT'S WHAT  
YOUR CUSTOMERS  
WANT!**

You have a *double* interest in every range you sell! The range sale is only the start . . . the rest is continued LPG payloads.

Your business depends on satisfied customers, and a Florence Range begins to build a satisfied customer for you from the minute you install it. Florence cooking . . . "cooking at its best" . . . works for you day after day in your customer's kitchen . . . building good will that means lasting payloads.

Whether your customer wants a de luxe range (like the one shown here) or a moderately priced range, you can answer her need exactly with a Florence that will give her home more convenient, more dependable, pleasanter cooking!

Write today for full information.

**FLORENCE STOVE CO.**

*General Offices and Plant, Gardner, Mass.; Western Offices and Plant, Kankakee, Ill.; Sales Offices: 1459 Merchandise Mart, Chicago; 45 E. 17th Street, New York; 53 Alabama Street, S.W., Atlanta; 301 N. Market Street, Dallas; and 2730 16th Street, San Francisco.*



# RESEARCH

● **BUTANE-PROPANE** *News* wishes to keep its readers informed regarding technical and practical advances concerning research, manufacture, development, and transportation in the liquefied petroleum gas field. In this column will be found a resume of recently published articles, papers, bulletins and books dealing with the industry's various phases.—Editor.

**Refrigeration Aids in Iso-Butane Manufacture**—*Refiner*, July, 1941, pp. 62-65. By adding propane refrigeration units for the lean oil and the field gas circuits and redesigning tower equipment, Superior Oil Co., of California, has provided output of iso-butane and increased production of normal butane and stabilized natural gasoline in its Kettleman Hills plant. The iso-butane output is being used as feed stock for the manufacture of 100-octane gasoline in refining. A resume of the operating condition is given. Described and illustrated.

**City Gas—The Ideal Smokeless Fuel for Domestic and Industrial Uses**—F. E. Vandaveer. *Industrial and Engineering Chemistry*, July, 1941, pp. 852-857. A brief review of the magnitude of the smoke problem in urban communities nationally, as well as its causes and economic and health aspects, is given. Energy requirements for residential, commercial, and industrial heating purposes are evaluated, and the proportion of such total requirements supplied by various types of fuels is estimated. The economic possibilities of supplying all energy requirements with clean, refined fuels are discussed. Cleanliness of production, manufacture, distribution, and utilization of gas are em-

phasized. Specific data are presented on chemical properties of commercial gaseous fuels and their combustion products under typical industrial and residential utilization conditions. Mechanics of gaseous fuel combustion are briefly treated. Comparative economies of residential heating with various types of fuels are indicated. Similar treatment is given to industrial heating processes, with form value of different types of fuel receiving particular emphasis. Special reference is made to the part gas has taken in the smoke abatement problem in the St. Louis metropolitan area.

**Explosives or Other Dangerous Articles on Board Vessels**—Regulations Governing the Transportation, Storage, Stowage, or Use of Explosives or Other Dangerous Articles or Substances and Combustible Liquids on Board Vessels. U. S. Department of Commerce, Bureau of Marine Inspection and Navigation. Published April 9, 1941.

**Air and Gas Compression**—T. T. Gill. Published by John Wiley and Sons, Inc., 1941. This book deals with the properties of gas in regard to compressibility, critical data and specific heats, as applied to the solution of the problem of air and gas compression.

**The Waverly Handbook**—Tenth edition. Compiled and edited by S. G. Symons. This new edition of 902 pages contains much new information relating to various processes of refining, standards, lubrication problems (both industrial and automotive), production and marketing data. It has hundreds of useful reference tables and is profusely illustrated with charts and graphs. Chapter headings include Lubricating Oil—

Refining Processes; Pennsylvania Crude Oil—Refining Processes; Animal and Vegetable Oils; Fuel Oil—Its Uses and Advantages; World Crude Oil Production and Price Record; Gasoline—Types and Methods of Refining; Secondary Recovery Methods; Automotive Lubrication; Benzol as a Blending Agent; A.S.T.M. Petroleum Standards; Oil and Gasoline Meters—Types and Uses; Fire Underwriters Regulations; Business Law Section; Tables of Weights, Measures, Capacities; Workshop Formulas—Construction Data; Business and Banking Information—Tables, and Waverly Formulas. Published by Waverly Oil Works Co.; distributed by The Symons Co., 1501 Investment Bldg., Pittsburgh, Pa. Price \$2.

**Fuel Flue Gases**—The Application and Interpretation of Gas Analyses and Tests—American Gas Association, 420 Lexington Ave., New York City. Second edition. Contains chapters on complete fuel gas analysis, physical tests, application of gas analyses, specific constituents of fuel gases, deposits in distribution systems, and furnace atmospheres.

**Stress-Relieving Welded Pressure Vessels in the Field**—E. S. Robb. *Refiner*, July, 1941, pp. 251-257. Due to operating conditions, extensive welding repairs, or additional heavy welding occasioned by the installation of new nozzles, manways or reinforcing pads, it may be necessary or at least desirable to stress-relieve a part or the complete welded vessel. It has been found practical and much more economical to do the work in the field rather than to dismantle the unit and send the vessel back to the manufacturer. An outline of the equipment and methods used together with the results obtained is discussed in this article.

**Socony-Vacuum Vapor-Recovery Plant Has Unusual Flexibility**—W. T. Ziegenhain. *Oil and Gas Journal*, July 10, 1941, pp. 44, 45. At the Augusta, Kan., refinery of Socony-Vacuum Oil Co., Inc., all light fractions

recovered in the various departments are processed through one interrelated series of absorbers and fractionators. This permits the economical production of motor fuels and blending stocks of optimum seasonal volatility.

**Dehydration in High Pressure Gas Operations as Applied to Repressuring and Pressure Maintenance**—R. A. Carter. *Oil Weekly*, July 21, 1941, pp. 29-33. Hydrates begin to form on the inner wall of the pipe, gradually getting heavier until only a small orifice remains. From this point on the formation is accelerated because of expansion of the gas, and the line soon becomes completely plugged. It is this condition with which the field man is confronted, and he must in this day and age arrive at a solution for a minimum of expenditure; and many and ingenious are the methods and devices used to accomplish the results desired. The following are a few methods: Reduction in line pressure; heating the gasoline; lubricating materials into line; partial dehydration or dehumidification. These methods are discussed.

**Which Electrode?**—E. W. P. Smith. *American Machinist*, May 14, 1941, pp. 421-423. Efficient, economical welding is achieved only when proper electrodes are used. The article gives the chief characteristics of basic types.

**How to Find Heat Losses from Buried Pipe to Still Air**—G. A. Hawkins. *Industrial Power*, May, 1941, pp. 62-63. Chart is designed for rapid calculating of heat loss in determining if insulation is needed on bare horizontal pipes carrying steam or hot liquids.

**Automatic Control of Internal Combustion Engine Temperature**—W. A. Sawdon. *Petroleum Engineer*, July, 1941, pp. 19-22. Control of temperature circulated through radiator rather than volume of water through engine is basis of new designs.

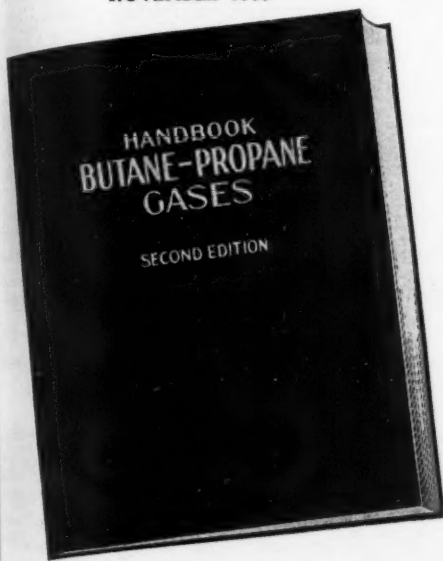
# Handbook BUTANE-PROPANE GASES

LATEST REVISION  
NOVEMBER 1938

SECOND EDITION

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Gases: Analysis & Testing: Properties of Mixtures: Bottled Gas Distribution: Bibliography: Central Plant Directory: Catalog Section.

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1709 West 8th Street, Los Angeles, Calif.

OCTOBER-1941

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# Firemen See Fires Controlled

WITH LP-Gas definitely in the spotlight, the Pacific Coast Fire Chiefs' Association held its 48th annual convention in Reno, Nev., Sept. 8-10. The registration exceeded 700.

Under sponsorship of Pacific Coast Section, L.P.G.A., one of the outstanding features of the convention was a liquefied petroleum gas fire control demonstration which was specially held at the request of the Fire Chiefs' Association. This event, divided into two separate parts, included the actual field demonstrations, which were later followed by a platform appearance of Max B. Anfenger, fire protection engineer, Standard Oil Co. of Calif., and Dr. O. W. Johnson, chemical engineer of the same company, who gave their platform-laboratory-demonstration paper titled "Physical Properties of Liquefied Petroleum Gases That Affect Their Fire Hazard." (See BUTANE-PROPANE *News*, March and April, 1941.)

## All Seats Filled by 7 A.M.

There is perhaps no indication that better illustrates the tremendous interest of fire service men in LP-Gases than the circumstances under which the field demonstrations were held. This portion of the program was scheduled for 7 o'clock in the morning when, under convention conditions, very meager attendance can normally be anticipated, but well before the start of the program at that hour, every

available seat was taken and attendance at the event was estimated to exceed 500.

Chas. E. McCartney, Chairman, Pacific Coast Section, L.P.G.A., appointed Tallent H. Ransome as chairman to conduct the demonstrations. His committee included Stanley D. Clithero, fire protection engineer, General Petroleum Corp., who was the commentator for the fire control demonstrations; Max B. Anfenger and Dr. O. W. Johnson, Standard Oil Co. of Calif.; D. A. Bering, safety engineer, Shell Oil Co. Inc.; Wesley Sawyer, Ansul Chemical Co. of Calif., and John H. Kunkel, secretary, Pacific Coast Section, L. P. G. A. who was in charge of arrangements, details and equipment.

## Reno Firemen Had Charge

Working under the direction of this committee, a team of firemen under leadership of Captain Zunino of the Reno fire department, using their own equipment, handled the various fire control demonstrations and as in past similar events sponsored by Pacific Coast Section, particular emphasis was placed on the problem of stopping the flow of fuel from cylinders or storage tanks before extinguishing the fire.

The first demonstration given showed the transfer of butane from a fuel truck into a skid tank. The various features of the fuel truck, the transfer operation and the skid tank were explained in full detail. During the transfer operation, leak-

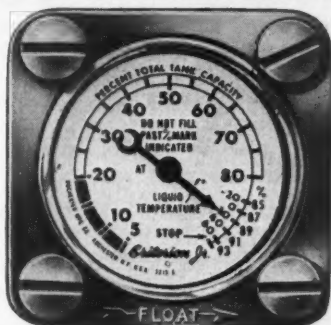
# SAFETY FIRST . . . LAST and ALWAYS

## with ROCHESTER

## GAUGES on the Job!

Rochester Criterion Gauges incorporate the famous Rochester magnetic principle of operation which assures greater accuracy and positive leak-proof construction. Listed as Standard by Underwriters' Laboratories and distributed by manufacturers of L.P. Gas Systems. Adaptable to both above-ground and underground Systems also in I.C.C. and ASME Cylinders.

**MANUFACTURERS! Specify Criterion Gauges on Your L.P. Gas Systems!**



**Rochester Mfg. Co., Inc. - 17 Rockwood St. - Rochester, N. Y.**

# ROCHESTER *Criterion* GAUGES



4,000 gallon twin cylinder transport semi-trailer, weight only 12,000 lbs.

**McNamar tanks are built from special materials, stronger, lighter weight; and carry a higher ratio of pay load.**

## McNamar Boiler and Tank Co.

Tulsa, Okla.

Salem, Ill.

age was measured by a gas "sniffer" which measures and indicates the presence of an explosive mixture of gas and air. Applied at all critical points, the sniffer indicated no appreciable leakage and none sufficiently rich enough to result either in a fire or an explosion. After the fuel transfer, a large quantity of vapor was released to the atmosphere and allowed to drift downwind so that its rate of diffusion could be measured with the sniffer.

An LP-Gas hose test was conducted to demonstrate how industry engineers are building safety factors into equipment. In this test, a piece of hose was attached to a hydrostatic pump equipped with a pressure gage. The pressure in the hose was first raised to 100 lbs. then to 300 lbs. and, in stages, on up to 1,000 lbs. without bursting.

#### **Many Methods Demonstrated**

The fire control demonstrations began with illustrations of methods of shutting off the flow of fuel by crimping the copper tubing with a spanner or a rock and then shutting the main valve simulating conditions of a domestic installation, on up to methods of protecting firemen with hose sprays as they go in to shut off the main valve in other types of installations.

One of the most interesting demonstrations showed how the application of a relatively small amount of water can protect property from fire damage. In this test, a wooden panel was set 4 ft. away from a  $\frac{3}{4}$ -in. line carrying butane. The line was wide open, the fuel ignited and the baffle attacked with only a com-

mon garden hose. The baffle was found to be unscorched.

The program included fires from the vapor stage as well as fires from the liquid phase and the event ended with a demonstration of the action of excess flow check valves.



#### **Helpful Free Handbook For Gas Range Salesmen**

Well worth the attention of every sales manager interested in increasing sales volume on his better gas ranges, is a new 48-page handbook for salesmen, entitled "How to Sell More Gas Ranges." The book is free, and is being distributed by Harper-Wyman Co., makers of the Harper Burner System.

The handbook features 12 tested and practical floor demonstrations which give customers visual proof of the superiorities of the modern gas range. It also features a series of "selling sentences," which accompany each demonstration and designed to help the salesman put over his important selling points verbally.

The booklet is attractively printed in two colors and is pocket size. It may be obtained in quantity by addressing Harper-Wyman Co., 8582 Vincennes Ave., Chicago.



#### **Anchor Gasoline Corp. Increases Butane-Propane Production**

Announcement is made by W. A. Baden, that the Anchor Gasoline Corp.'s plant at Eola, La., has substantially increased its butane-propane production by the installation of new equipment. The production of the plant will be doubled.

The tank truck and tank car deliveries are made from this plant to the Anchor's many accounts in the local trade territory as well as to the Southeastern states.



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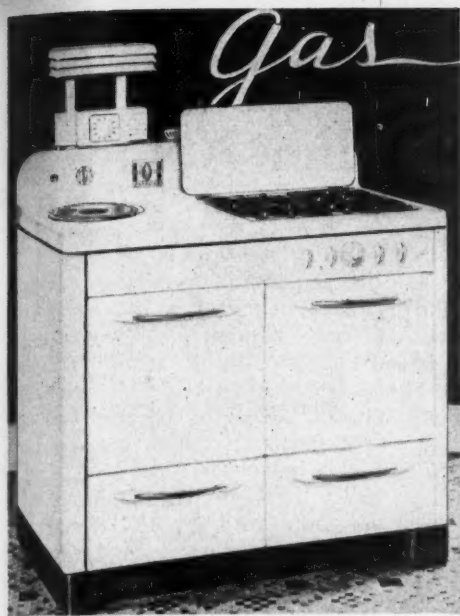
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News



## LPG---PLUS AN ELECTRIC BUDGET COOKER

Here's a top-performance LPG range—with a built-in, 6-quart, deep-well electric budget cooker. Operates on 110 volts—no special wiring required. This *extra* is helping sell many customers on LPG service. All Cavalier LPG ranges are tested and adjusted on LPG gas before shipment. Write today for information.



## EASY TO HANDLE CYLINDERS and APPLIANCES



### WITH THOMAS NO. 77 DOUBLE DUTY HAND TRUCK

Move cylinders (up to 100 lb. capacity) as well as appliances, quickly and smoothly.

10-inch ball bearing wheels and cushion pneumatic tires provide easy rolling on snow, soft earth or in your warehouse, prevent damage to lawns.

This truck also enables one man to move and install appliances. Web strap holds appliance rigidly to truck. Wide flanges over wheels give perfect support. Metal center strap enables service man to skid appliance from delivery truck. No lifting necessary.

**LOW COST, ALL WELDED, ONE PIECE CONSTRUCTION**



Write for prices and descriptive folder today.

A Product of

**THOMAS** TRUCK  
*of Keokuk*



**THOMAS TRUCK and CASTER CO.**

4161 MISSISSIPPI RIVER

KEOKUK, IOWA

# Weekenders Learn to Use Gas, Then Adopt it For Homes

**A** FORM of bottled gas merchandising which has been developed in Indianapolis, Ind., by the Meeker Sales Agency, "Bupane" gas distributors for that city, is sales of small 20-lb. tanks to city residents who own farm homes, resort cabins, or use the bottled fuel for cooking and water heating on vacation trips into the nearby hills.

D. C. Meeker, president of the company, has built this service into both an immediate source of appliance sales and, more important, prospects for home heating and cooking appliances, simply by following up each small-amount user after the latter has made three purchases of the 20-lb. tank.

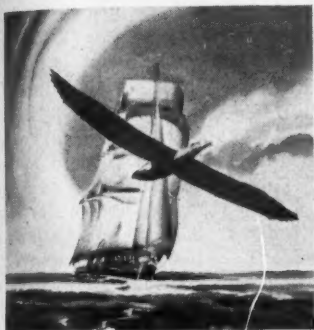
## Office Is on Resort Road

The Meeker office and showroom is located on a major highway leading to pleasant lakes and hill resorts to the east of the Indiana capital, and has capitalized on the thousands of weekend motorists who pass his store each Saturday and Sunday by building a permanent display of "Bupane" gas tanks hooked up outside the building. Two 100-lb. tanks on a single valve provide gas for demonstrating ranges, water heaters and floor furnaces, and are instantaneous "eye-catchers" for the country-bound traffic mentioned above.

Motorists who stop to look at the tanks find a display of small two-burner stoves in the nearby display window, ready for quick connection to a small "Bupane" tank, and suitable for broiling steaks, preparing lunches and outdoor meals on the outing. To move these more swiftly, Mr. Meeker will either rent the appliance at a moderate rate, or sell it outright to the regular weekender who feels that the extra convenience provided is worth the cost of the small stove and an occasional tank of gas. To build up appeal, the small stoves are often shown with steak hamburger or wieners made on display wax spread on the grill much like they are actually prepared.

From the large number of sales made in this way, Mr. Meeker has encouraged many weekenders to switch over from the irritating necessity of building a charcoal fire and tending it constantly for steak broiling to the efficiency of bottled gas. "Of course, this takes much of the essential work out of picnicking," he says, "but when the outing members are pressed for time, it solves a common problem perfectly."

Names of purchaser, renter, or user of stoves and gas are, of course, recorded in each instance. After the third transaction, the



## A Good OMEN —

An albatross is a good omen to a ship, but on land the best sign for L. P. G. is Anchorgas. Customers know they can depend on Anchor for a year 'round supply of Butane-Propane.

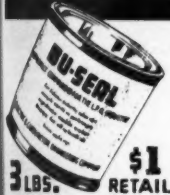
Our good reputation has been earned by prompt deliveries and carrying out all contracts as agreed.

**Anchorgas**

There is more profit and satisfaction in handling ANCHORGAS because it is a dependable, high quality fuel. Write or wire for immediate shipments by either tank cars or tank trucks.

**ANCHOR**  
PETROLEUM COMPANY  
Atlas Life Bldg. Tulsa, Okla.

## NEW! VALVE SEALING COMPOUND



Bu-Seal is a really new type seal for ALL LPG valves and fittings. You'll like Bu-Seal because it seals with safety, yet valves once set up may be removed easily and without damage.

### BU-SEAL OFFERS YOU ALL THIS

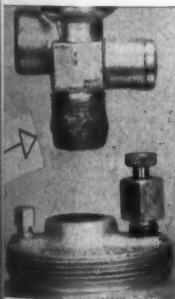
1. Very economical to use, as there is no waste.
2. Especially designed for LPG requirements.
3. Will withstand pressure up to 1200 pounds.
4. Takes permanent set only after 48 hours.
5. Valves once set up may be removed (no damage).
6. Is not soluble in water, oil or gas.
7. Has litharge and glycerine base.
8. Withstands long exposure in open container.
9. It will not deteriorate or corrode metal.
10. Provides absolute safety for customers and satisfactory performance for equipment.

(Packed in 6 oz., 12 oz. and 3 lb. cans only)

**ELECTRIC & CARBURETOR ENGINEERING CO.**

2323 E. 8th St.—"Pioneers of the Butane Industry"—Los Angeles

Arrow indicates Bu-Seal application.



name goes on the "active prospect" list, and is followed up by Meeker salesmen with the purpose of selling the prospect familiarized with bottled gas on using it in his own home. From this work, it is estimated, the Meeker Sales Agency has realized dozens of sales of ranges, water heaters and space heaters, and in five instances, complete heating plants. "Anything which gets bottled gas into the hands of future customers will help the dealer," it was summed up. "And we believe it will pay any dealer to feature a rental service for picnicking purposes."

### E. L. West Joins LP-Gas Staff of Warren Petroleum Co.

H. E. Felt, vice president in charge of the LP-Gas division of the Warren Petroleum Co., Tulsa, Okla., has announced that E. L. West has joined the LP-Gas department of that company.

In his new capacity, Mr. West will engineer industrial installations of butane plants for small towns in that community and handle butane and propane engineering problems.

Mr. West, a graduate of Oklahoma A. & M. college, was previously employed by the Southwest Tank Co., Oklahoma City, and was affiliated with a drilling company where he engineered butane conversions in connection with internal combustion engines.

In the LP-Gas division of the Warren Petroleum Co., Mr. West will be associated with Fred LaFortune, Allan James, P. J. Hoagland and L. M. Mauney, chief chemist. Mr. Hoagland, who received serious injuries from an automobile accident May 30, near St. Paul, Minn., has now recovered and is back on the job.

### Makes Seven Installations For One Dairy Firm

The Ballinger Butane Gas Co., Ballinger, Texas, in the last few months has made seven different installations to serve the G. E. Kemp Dairy at Ballinger, Texas, according to G. A. Swann, owner and manager of the firm. Installations were made in the dairy for heating water, washing bottles and pasteurization purposes and in homes of employes for domestic purposes. (Photo of Mr. Swann on Page 26.)

The company, which has been operating four years, and serves five counties, has also made an installation in a large school auditorium at Norton, Texas. Mr. Swann says that he does his own selling, which is largely domestic, with the help of two delivery men. He reports that his business is steadily increasing, due largely, he believes, to the acceptance of the product which is better known.

## CALENDAR

### September

**LP-Gas Industry Meeting**—Sponsored by Liquefied Petroleum Gas Association, The Palmer House, Chicago, Sept. 4.

**Society of Automotive Engineers—National Tractor Meeting.** Schroeder Hotel, Milwaukee, Wis., Sept. 25-26.

**L.P.G.A. Eastern Section** — Bear Mountain, N. Y., Sept. 29.

### October

**National Safety Congress and Exposition**—Stevens Hotel, Chicago, Oct. 6-10.

**American Gas Association 23rd Annual Convention**—Atlantic City, N. J., Oct. 20-22.

**L.P.G.A. Pacific Coast Section**—Multnomah hotel, Portland, Ore., Oct. 24-25.

**California Natural Gasoline Association, 16th Annual Fall Meeting**—Ambassador Hotel, Los Angeles, October 31.

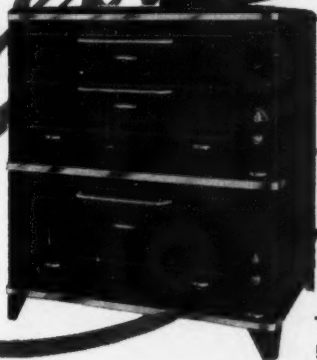
### November

**L.P.G.A. Midwest Section** — Hotel Nicollet, Minneapolis, Nov. 13-14.

### February

**L.P.G.A. Annual Convention**—Kansas City, Mo., Feb. 23-25.

an all-time



Despite the biggest volume of business in our 93-year history, including orders for national defense, we have been able, to date, to fill all orders for Blodgett Streamlined Baking and Roasting Ovens on schedule!

THE G. S. BLODGETT CO., Inc.  
53 Maple Street Burlington, Vermont

## CUMBERLAND GASOLINE CORP.

MANUFACTURERS OF

## BUTANE - PROPANE

For Twenty Years

\* \* \*

REFINERIES . . . KENTUCKY . . . WEST VIRGINIA

P. O. Box 1624, Huntington, W. Va.



## INVESTIGATE! SPRAGUE No. 0

a NEW, SMALL meter designed specifically for the measurement of L-P Gases. Rugged, made of cast iron, and simplified in construction. Delivers at  $\frac{1}{2}$ " W.C., 60 cu. ft. Propane, 55 cu. ft. Butane.

Write now for Bulletin 23-A

**SPRAGUE METER CO.**

**BRIDGEPORT, CONN.**

DAVENPORT, IOWA • HOUSTON, TEXAS • LOS ANGELES, CAL. • SAN FRANCISCO, CAL. • ST. LOUIS, MO.

**We Have Been Taking Care of Our Customers  
... but defense restrictions are  
depleting our stocks rapidly!**



Large reserve stocks have enabled us, up to this time, to handle our customers' orders with a fair degree of completeness . . . but additional delivery difficulties are arising daily. If you have further needs, we advise immediate action on your part to see if we still can fill your needs.

## **SOUTHERN GAS & EQUIPMENT CO.**

Little Rock,  
Arkansas

ALL TYPES LPG EQUIPMENT

Birmingham,  
Alabama

*"Serving Arkansas, Louisiana, Missouri and the Southeast"*



## Fish Hatchery Uses LP-Gas

**R**ECENTLY completed, an LP-Gas system is now in operation at the Hot Creek Fish Hatchery, Hot Creek, Calif. It was built for the Fish and Game Commission of the State of California by Parkhill-Wade, of Los Angeles.

The completely modern LP-Gas plant consists of two separate units. These are known as the upper and lower units and located about one-half mile apart. The fuel used consists of a mixture of propane and butane, being regulated by the season's temperature. During winter months the thermometer often falls to 20° below zero, making propane a necessity.

The upper unit is the larger of the two, with a storage capacity of 3080 gals. It has a vaporizer capacity of 13 gals. per hour, or

390 cu. ft. of gas per hour. This unit supplies fuel for the superintendent's home, in which is operated four floor furnaces, one cook stove and one water heater; and three assistants' cottages, operating one cook stove, three floor furnaces and one heater.

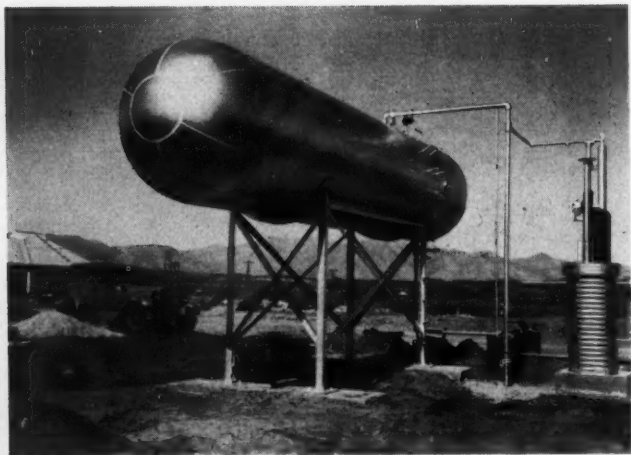
In addition to these eleven domestic appliances, the upper unit supplies fuel to one water pumping plant, two Kohler electric plants and the meat house where one refrigerator plant, one meat grinder and one large booster heater are operated.

The lower unit, entirely independent of the larger system, has a storage capacity of 1500 gals. and a vaporizer to supply 105 cu. ft. of gas per hour. This unit operates an assistant's cottage, consisting of one cook stove, three floor furnaces and one water heater; and the main hatchery building, where one large water heater and one space heater is connected.

Both units are automatic with

California's Hot Creek Fish Hatchery in the process of building. An ideal mountain setting and abundant pure water make this one of the finest hatcheries now in operation. LP-Gas makes it one of the most modern and comfortable.





The upper unit showing storage tank and vaporizer. It has a capacity of 390 cu. ft. of gas per hour. The tank is built to propane specifications, as the temperature drops to below zero in the winter months.

complete safety controls to care for overload of the system or failure due to heater or vaporizer. This is the first hatchery of this type in California. The location was selected because the water is supplied by several springs which maintain temperatures of 51° throughout the year. The eggs are hatched in 21 days as against 30 to 45 days at the other hatcheries.



### Gas Tanks Returned From Haiti After 15 Years

The Pittsburgh Thermoline Co., Pittsburgh, Pa., received back from Port au Prince, Haiti, about Aug. 1, six 25-lb. "Blaugas" tanks shipped there in 1926, according to E. H. Buehrig, manager of the company.

The enameled tanks were built to withstand an 1800-lb. working pressure for use before propane gas became generally known. A money deposit made on the tanks by the company in Haiti prompted the return of the cylinders.

A. N. Kerr, of the Imperial Gas

Co., Los Angeles, who has been engaged in the industry almost since its inception in this country in 1910, states that the high working pressure required for the above tanks was due to the fact that in 1926 the fuel contained many gases other than propane, including ethane, ethylene, butane, butylene, isobutane, propylene, pentane, and heavy oils, because there had yet been no method devised to separate them. Usually, they contained as much as 15% of heavy gasoline.

Installed in the cylinders were dip pipes that extended to the bottoms and through which the liquid was drawn off. The liquid went through a liquid regulator into a 90-lb. expansion tank; then through another regulator as a gas into the home system. Four regulators, all with babbitt seats, and costing about \$15 each, were required on every system. One high pressure regulator reduced the pressure from 1800 lbs. to 90 lbs.; a low pressure regulator reduced it from 90 lbs. to 4 oz.; and in addition there were two diaphragm relief regulators, one for 90 lbs. and one for 4 oz.



## NO WORRY..

No dissatisfied customers, complaining about lack of heat, when you install a

## MOORE'S *Gas* HEATER

Moore's Circulating Radiating Gas Heaters available in wide range of sizes... substantially constructed for long life... will harmonize with all home furnishings... operate efficiently at low heat cost.

(Illustrated) Model 40-I

**THE MOORE CORPORATION**  
*Quality Since 1857* JOLIET, ILLINOIS

## For Greater STABILITY

IN DEHYDRATED BUTANE AND PROPANE  
A Higher Quality Product . . . . A More Dependable  
Source of Supply . . . . A Product that will secure for  
you a list of customers more satisfied with a fuel giving  
trouble-free and efficient service . . . . try Carter Propane  
and Butane.

Write for complete information to: The Carter Oil Company,  
Marketing Department, Room 928, National Bank  
of Tulsa Building, Tulsa, Oklahoma.

DEHYDRATED  
*Propane and Butane*  
**THE CARTER OIL COMPANY**

TULSA, OKLAHOMA  
Shipping Points: Seminole, Okla., Stonewall, Okla., St. Elmo, Ill.  
**WHOLESALE ONLY!**

## Oklahoma Laws Taking Shape

**T**ENTATIVE rules and regulations which will make it very difficult, if not impossible, for unethical manufacturers, dealers or distributors of liquefied petroleum gas products, equipment or appliances to operate in the state of Oklahoma, were outlined to a conference of representatives of the LP-Gas industry at Oklahoma City, Okla., Sept. 3, by Carl C. Garner, state fire marshal. A partial draft of the rules was reviewed at a previous conference on August 31.

The tentative regulations, covering 30 typewritten pages of legal-sized paper, were prepared by Mr. Garner acting in his capacity as Oklahoma liquefied petroleum gas administrator under a law passed by the recent state legislature, which became effective Aug. 23. The regulations were scheduled to be filed with the secretary of state about Sept. 10 and to become effective 30 days after such filing. Mr. Garner stated that copies of the regulations will be distributed to members of the industry about Oct. 15 but that provisions of the law requiring taking out of licenses, giving bonds and paying fees will date back to Aug. 23 when the law became effective.

At the suggestion of Mr. Garner, a committee of representatives of various branches of the LP-Gas industry was appointed at the conference to confer with him and suggest any further proposed changes in the regulations before they become finally effective. This committee is composed of: A. L. Tucker, chairman; J. L. Grigsby, vice chairman; Frank

Allen, Hubert Leaf, D. H. Binkley and C. J. Nicklas, all of Oklahoma City.

The regulations incorporate provisions in substantial conformity with standards of the National Board of Fire Underwriters for the design, installation and construction of containers and pertinent equipment designed for the efficient and safe handling of liquefied petroleum gas.

In addition to such regulations Mr. Garner explained that a number of regulations have been added especially applying to enforcement in Oklahoma. These include, levying of an installation fee, based on the water capacity of the tank or container, which ranges from \$1 for tanks or containers of less than 60 gal., to \$5 for installations of 401 gals. and up. This fee will be charged not only on original installations but also on additions or substantial changes in the systems.

Nineteen districts were established by the state administrator where examinations were held during the latter part of August and early September for licenses required of all installers. Licenses may also be obtained at the state fire marshal's office. The license fee is \$1 per year and this must be accompanied by a bond for \$1500 to be given by each installer to guarantee that installations have been made in accordance with the rules and regulations. About 190 licenses had been issued up to Sept. 3.



### Reliance Regulators Described In New Bulletins

Reliance Regulator Corp., Alhambra, Calif., recently issued a set of three pamphlets dealing with their types "H," "K," and liquefied petroleum gas regulators. These booklets contain tables regarding capacity, parts, and specifications.

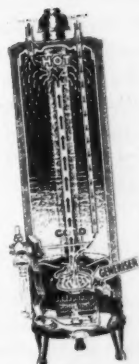
Operating data, instructions for ordering, and list prices are included.

For Water Heating . . . L.P.G.'s  
TOUGHEST HOUSEHOLD JOB...

• BUILD LOAD AND  
GOOD WILL WITH  
"GENERALS"



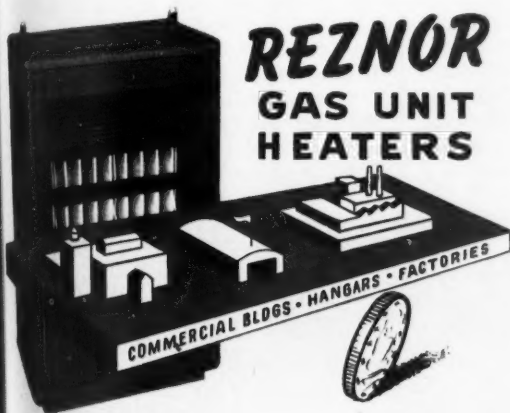
Proven superiority for low hot flame  
L.P. Gas... scores of exclusive fea-  
tures... 100% gas shutoff (burner  
and pilot). Be SPECIFIC—recom-  
mend GENERALS!



SPECIFICALLY  
MADE FOR  
BOTTLED  
GASES

**L.P.G.** *eneral*  
WATER HEATERS

General Water Heater Corp., 7 East Cypress Avenue, Burbank, Calif.  
San Francisco • Detroit • Kansas City • Dallas • Houston • Memphis



**REZNOR**  
GAS UNIT  
HEATERS

**MOVE MORE WARM  
AIR PER DOLLAR**

• For five reasons, Reznor Unit Heaters demonstrate outstanding economy. Suspended from the ceiling, they save valuable floor space. Installation costs become lower with gas. Automatic and intermittent firing saves labor and fuel expenses. Best of all, special heat exchanger tubes and plates enable Reznor Heaters to deliver warm air with greater velocity over greater areas than any others. Write for new catalog U 42 today.

Reznor Manufacturing Co.  
304 James St. Mercer, Penna.

**R E Z N O R**  
"GAS HEATERS EXCLUSIVELY SINCE 1888"



## **Dallas Butane Gas Co. Is Formed Following Merger**

James E. O. White and John H. Grinnell have merged their respective companies known as Dallas Butane Gas Co. and Butane Distributors into a new company to be known as Dallas Butane Gas Co. (See photo on this page).

The merged company is located at 499 W. Commerce St., Dallas, on U. S. Highway 80. It sells butane for motor fuel, domestic fuel, and retail delivery, in addition to appliances, butane systems and carburetors. Six salesmen work out of the new headquarters which serve Dallas county and several adjoining counties. Four automotive units all converted to butane, are operated. The company maintains a 6000-gal. storage tank from which the gas is metered out to customers.

A newly-constructed frame building, 30 feet square, is utilized for office and display space. A large porcelain Neon sign is placed in one of the four large plate glass windows which extend across the front of the building. Other windows are located at each end of the building to provide adequate light for the showroom. Before moving into the new building on July 15, the company conducted a

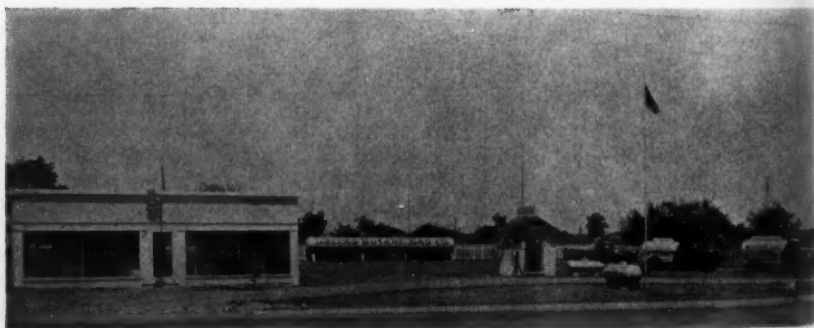
survey which revealed that 24,000 cars pass the place of business daily. A large parking space is provided for the new location.

Previous to the merger, Mr. White operated Dallas Butane Gas Co. from another location in the city for the last two years and Mr. Grinnell maintained a wholesale butane and motor fuel business at the location of the new company for several months.

## **O. L. Ely Is Traffic Manager For Anchor Petroleum Co.**

Due to increase of business and territorial expansion, the Anchor Petroleum Co., Tulsa, Okla., wishes to announce that, effective immediately, O. L. Ely assumes new duties as the traffic manager for the company.

Mr. Ely has had many years experience in his field, which covers most every phase of traffic work; including operation and maintenance of tank cars. He was traffic manager for the Waggoner Refining Co., Electra, Texas, and the W. T. Waggoner Estate, Vernon, Texas, for 17 years. He went to Tulsa from Amarillo, Texas, where he has been connected with the Phillips Petroleum Co. for the past two years. He has a wide acquaintanceship in north Texas and Mid-Continent territory.



**The bulk plant, showroom and office of the Dallas Butane Gas Co.**



**CROWN GAS RANGES for LIQUEFIED GAS**



**BACK UP YOUR SALES STORY WITH DEPENDABLE CROWN RANGES . . .** Crown offers beauty and distinctiveness plus superior construction which make and hold customers.

Write for Catalog and Dealer Proposition

**CROWN STOVE WORKS**

4631 W. 12th PLACE, CHICAGO

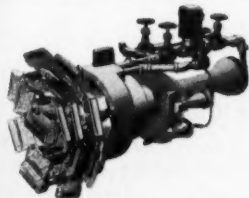
Designators of BUFFET and DIVIDED TOP GAS RANGES

**F & E**

Presents

Its "Fast and Efficient"

LJ20 Liquid Butane Burner



Pat. and Patent Pending  
For Dehydrators, Water Boilers,  
Cotton Driers, Etc.

For full details of our complete line  
of L.P.G. Burners and Torches  
write to

**F & E Mfg. Co.**

P. O. Box D Centerville, Calif.

# KEEP FAITH WITH YOUR CUSTOMERS

Your customers depend upon you for uniform, high-quality fuels. Keep faith by giving them the very best—Philgas Propane or Butane! With Philgas supplying your needs you are sure of a uniform, high-quality product at all times.

But high quality is not the only advantage you gain by dealing with Philgas! Prompt deliveries are assured by adequate manufacturing, storage and transportation facilities; and the services of competent Philgas engineers are available to you when needed.

Investigate the many "plus" advantages of Philgas today! It will be well worth your while—and there will be no obligation.

**Philgas**  
DIVISION

PHILLIPS PETROLEUM COMPANY

GENERAL MOTORS BUILDING  
DETROIT, MICHIGAN

NEW YORK

MILWAUKEE

PHILADELPHIA

ST. LOUIS

CHICAGO

AMARILLO

BARTLESVILLE, OKLA.

THE NATION'S LARGEST MARKETER  
OF LIQUEFIED PETROLEUM GASES

## Midwest Section Meeting Dates Changed to Nov. 13-14

The annual meeting of the Midwest Section, L.P.G.A., originally scheduled for Oct. 30-31, has been postponed to Nov. 13-14. The place is the Hotel Nicolet, Minneapolis, according to Charles Russell, Chairman of the Section.

The change in dates was necessitated because the Homecoming football game between the University of Minnesota and Northwestern University will be played Nov. 1 and advance reservations have completely exhausted all available hotel space.

John L. Locke, program chairman of the convention, and Francis McCahill, who has charge of reservations and other arrangements, are preparing for a large attendance. There will be papers delivered on current problems of the industry, appliance and equipment exhibits, and a banquet.



JOHN L. LOCKE

## New Folders Describe Water Heaters and Boilers

The American Radiator & Standard Sanitary Corp., Pittsburgh, Pa., has just issued new literature on "American" gas-fired boilers and water heaters in the form of seven folders and leaflets. Four of the leaflets cover the company's line of boilers suitable for all sizes of buildings from a small home to a large plant. These leaflets give construction features with cutaway views of each boiler, along with necessary technical information.

The other three folders, printed in full color, are devoted to automatic storage water heaters.

Space is available for imprinting of name and address. Reasonable quantities of these folders are available by addressing the advertising department of the company at Pittsburgh.

## Research Shows Large Market In Automatic Heating Field

Following a survey conducted by the Ross-Federal Research Corp., it has been revealed to the Minneapolis-Honeywell Regulator Co. that the new automatic heating market includes the 54% of all homes valued up to \$10,000 that do not have automatic heating.

The survey also showed that 97% of these homeowners think that automatic heating is too expensive, that one-third of the homeowners do not realize the easy terms available for financing automatic heating, and that there is a tremendous potential market for replacement sales among oil burner installations alone as 377,000 are more than 10 years old.

Six months ago, Minneapolis-Honeywell began a broad national advertising campaign to educate this market to the benefits of automatic heating.

## George Beese Heads Iowa OPM Office in Des Moines

The Iowa branch of the Office of Production Management was opened in August in Des Moines, Iowa, with George Beese, an industrial engineer of the Fisher Governor Co., Marshalltown, Iowa, as deputy manager for the State.

Mr. Beese will draw \$1 per year from the Government but the Fisher Governor Co. will not subtract that amount from his regular salary.

*For Safety  
and Economy*

## ETHYL MERCAPTAN

—Purified—

The **ACCEPTED**  
standard  
odorant  
for liquefied  
petroleum  
gases.

**MALLINCKRODT  
CHEMICAL WORKS**

ST. LOUIS

NEW YORK

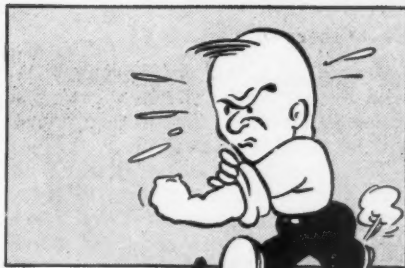
• We Specialize in Valves and Fittings for Appliances using Liquefield Petroleum Gas as a Fuel.

• Write for descriptive circular.



• This Offset Adapter can be furnished in  $\frac{1}{4}$ ",  $\frac{3}{8}$ ",  $\frac{1}{2}$ ",  $\frac{3}{4}$ " and 1" centers.

**The W.J. SCHOENBERGER Co.**  
**CLEVELAND OHIO**



**BOY!  
CAN WE GET  
TOUGH!**

The men here at Viking are a pretty peace-loving lot. They work hard, like to picnic, to boat and fish on the river, to go for long drives with their families. But let a national emergency pop-up, like the one we've got now, and they can get tough in a hurry.

We've watched our men bend a little closer to their lathes, we've seen them sacrifice leisure time for overtime, we've caught the seriousness of their attack upon a casting, an assembly job, a shipping crate. They know that in their efforts is America's answer.

In comparison with the big, sprawling airplane factories and booming steel mills, our job seems sorta small and insignificant. But to all of us here at Viking it's the most important thing we've ever done.

**VIKING PUMP  
COMPANY**  
CEDAR FALLS, IOWA

## **Fire Prevention Week to Be Observed Oct. 5-11**

According to an announcement issued by the National Fire Protection Association, Fire Prevention Week will be observed Oct. 5-11.

The Association states that, "With defense the paramount issue in every American's mind, fire rates first place among destructive agencies which threaten our internal security. With production on the upward curve there is further need for tightening our defense against fire for statistics show that the incidence of fire increases as production increases."

## **N.G.A.A. Will Hold 1942 Convention in Tulsa, Okla.**

The annual convention of the Natural Gasoline Association of America will be held May 13-15, 1942, in the Mayo Hotel, Tulsa, Okla., according to a recent announcement by William F. Lowe, secretary-treasurer of the Association. These dates are the three days preceding the opening of the International Petroleum Exposition and will permit attendants to



**E. E. De Back, elected to the newly created vice presidency, and Ray E. Miller, president of the Natural Gasoline Association of America.**

take in both attractions with one trip to Tulsa.

An unusually full program is already being planned with special features of interest since this meeting will mark the 21st anniversary of the N.G.A.A. organization.

A new vice presidency in the Association was created on Sept. 9 and E. E. De Back, general manager of the Chicago Corp., Corpus Christi, Tex., was elected to fill the position.

## **Robert Wilson, Leslie Brooks Advertising Agencies Merge**

Announcement has been made of the merger of Wilson Advertising Agency and Leslie Brooks & Associates, both of Tulsa, Okla., on Sept. 4. The new firm, to be known as Brooks-Wilson, is located at 410 Mc-Birney Bldg., Tulsa, and operates nationally.

Among accounts handled by Wilson Advertising Agency are those of the McNamar Boiler & Tank Co., Clute Petroleum Co., and Anchor Petroleum Co., all of Tulsa, whose advertisements appear in BUTANE-PROPANE News.

## **H. A. Thrush & Co. Issues Heating Specialty Folder**

H. A. Thrush & Co., Peru, Ind., has issued a folder featuring heating specialties for gas-fired systems. The folder describes the Thrush forced circulating hot water heating plant and heating specialties for gas-fired systems made by the company. These specialties include water circulators, flow control valves, pressure reducing valves, differential pressure relief valves, air tight pressure tanks, high pressure or temperature relief valves, radiant heat controls, and modulating water temperature controls. The folder is available upon request.

## New MARKETS FOR L-P GAS MEN

### Plumber's Furnace

By selling these Mutual L-P-Gas operated plumbers furnaces, dealers not only make a profit on the original sales but open up an entirely new market for their L-P Gas.

Here is a new-type furnace praised by plumbers for its efficiency, economy and ease of operation.

Increase your L-P-G sales and your equipment profits by introducing the Mutual Plumbers Furnace in your area.

Send today for full descriptive matter.

**MUTUAL LIQUID GAS CO.**  
3811 W. Imperial Hwy. Inglewood, Calif.



Plumbers Furnace  
with Shield

## TODAY . . . . ORDER



Peerless Radiant Heater 6475. It has five double radiants and an input capacity of 20,000 BTU's. Available in seven radiant, 28,000 BTU capacity. Complete line of modern radiant heaters, A. G. A. approved for LP gases. Due to present conditions, you will facilitate deliveries by anticipating season's needs now!

**PEERLESS**  
MANUFACTURING CORP.  
LOUISVILLE • KENTUCKY



## BUY WARREN

### Butane and Propane

## For—

1. Constant High Quality that can be interpreted in terms of plus quantity.
2. Speedy delivery and understandable service from several terminals strategically located.
3. Adequate facilities to serve you; such as Warren's large fleet of tank cars; storage and loading facilities for customers' trucks.

**PARTNERS — NOT  
COMPETITORS OF  
OUR CUSTOMERS**

Write or Wire

**WARREN**  
**PETROLEUM CORP.**

Manufacturers and Wholesalers  
Tulsa, Oklahoma

## **Bastian-Blessing Co., Chicago, Moves Into New Plant**

The Bastian-Blessing Co., of Chicago, pioneers in the design and manufacture of "Rego" high pressure gas equipment and of oxy-acetylene welding and cutting apparatus, has moved into its new streamlined factory and home office at 4201 Peterson Ave., on Chicago's northwest side, according to an announcement by Vice President Ellsworth L. Mills.

The building covers 182,000 sq. ft. on a single floor and has the departments so laid out that materials and operations flow without interruption from one end of the building to the other. The tract embraces 13 acres along a railroad line. (Photo of new building is shown on this page.)

This model, daylight structure, housing modern high-speed machinery, doubles the size and capacity of the company's former plant and offers extensive technical facilities for continued improvement of product and service.

The Rego line of products includes

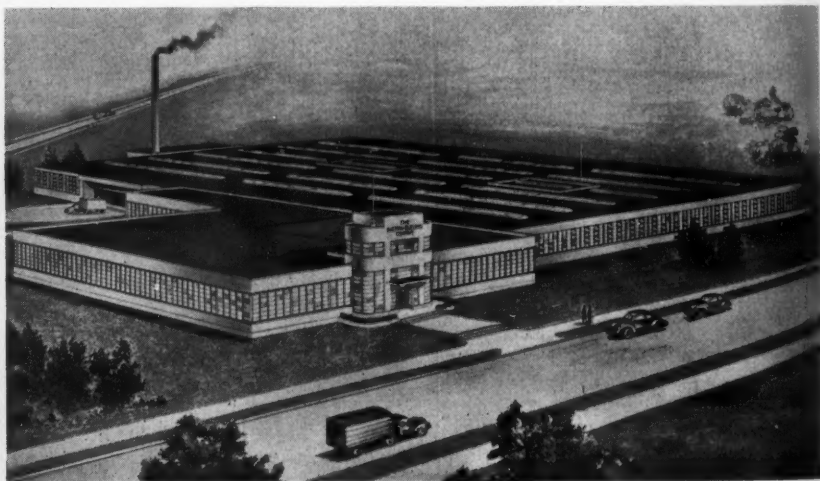
LP-Gas equipment for installations using portable cylinders, compact units for underground systems, bulk plant equipment, shut-off valves, cylinder valves, pressure reducing regulators, check valves, relief valves, liquid level and pressure gages, and many specialized parts.

◆ ◆

## **Smith Meter Co. Publishes Tank Truck Meter Bulletin**

Smith Meter Co., 5743 Smithway St., Los Angeles, has just published a new eight-page bulletin, No. 127, illustrating and describing late developments in tank truck meters for the LP-Gas industry.

The bulletin gives complete technical information with various pressure drop charts, dimension tables, etc. Emphasis is placed on the flexibility of the meter design, the wide variety of counters and fittings available, and the numerous arrangements possible. Copies of the bulletin may be secured by writing the Smith Meter Co.





## DREAMS COME TRUE!

**PROFIT !  
PLEASURE !  
PRESTIGE !**

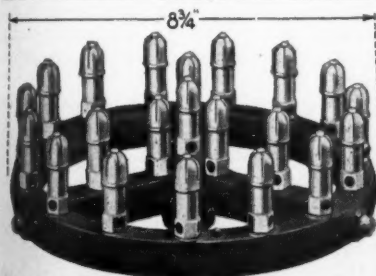
and all are his because he is an exclusive distributor of the most distinctive butane gas system the industry has produced—the popular patented

**NATIONAL**  
*Thermo-Syphon*  
**SYSTEM**

"The Butane Percolator"

Owned, manufactured and distributed through progressive dealerships by

**National Butane Gas Co.**  
MEMPHIS, TENNESSEE

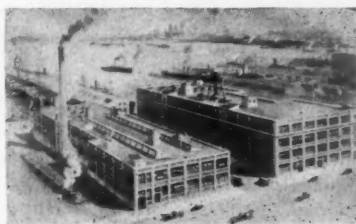


No. C 210 Barber Burner

## BARBER APPLIANCE BURNERS

The burner is the heart of the appliance. Barber Units are correctly designed, with the proper jets, to fit the individual appliance, and give complete combustion on Butane-Propane Gas. Appliance makers and fuel distributors assure better service and economy for their customers by recommending the use of Barber Burners. Submit your burner problems to us. Catalog of complete line on request.

**THE BARBER GAS BURNER CO.**  
3704 Superior Ave. Cleveland, Ohio



Plant of the Vulcan Proofing Company

## VULCAN

A dependable source of supply for Diaphragms. Made on a specially woven base, from selected grades of cotton, Vulcan Diaphragms are manufactured from wholly synthetic materials. This frees the diaphragm situation of all world-wide influences.

*Write for Details*

**Vulcan Proofing Company**  
First Avenue and Fifty-eighth Street  
Brooklyn, New York

**VULCAN**  
**NON-LEATHER**  
**LPG**  
**METER and REGULATOR**  
**DIAPHRAGMS**

## List of Materials in Soil Corrosion Tests Compiled

In order that metallurgists, corrosion engineers and others concerned with the behavior of metals underground may have a list and description of all materials which have been included in various investigations made since 1922, No. LC646, titled, "Materials in the National Bureau of Standards Soil-Corrosion Tests," for distribution.

The significant features of the various materials are discussed from the standpoint of their resistance to corrosion in soils and in other environments in which the same corrosive factors are present. The specific contribution of the various alloying elements to corrosion resistance is discussed for the different types of materials.

## Col. W. F. Rockwell Appointed National Councillor

Announcement has been made that Col. W. F. Rockwell, president of the Pittsburgh Equitable Meter Co. and the Merco Nordstrom Valve Co., Pittsburgh, Pa., has been appointed a National Councillor of the Chamber of Commerce of the United States. He will represent the Association of Gas Appliance and Equipment Manufacturers.

## American Recording Chart Acquires Anubis Laboratories

The American Recording Chart Co., manufacturers of "Arcco" recording charts and in recent years distributors of Anubis instruments, have acquired from the estate of the late Col. George Sydney Binkley, the entire business of the Anubis Laboratories.

The acquisition of the Anubis Laboratories necessitated the enlarge-

ment of the present building to include the new laboratory and instrument shop. To provide precise control over calibration of instruments in which humidity is a factor, the air conditioning was extended to the new shop. In this shop, as in the chart department, a modern lighting system has been installed. Individual fluorescent lighting has been placed at each machine and assembly bench. Glare-reducing glass has been installed throughout.

Special testing and calibrating devices are used in the laboratory for testing and adjusting each Anubis instrument before shipment.

Under the direction of J. W. Dunn, all details of the new buildings have been planned to fit the two types of manufacturing work engaged in by the company. These include "Arcco" recording charts and ink, "Beta" pens, Anubis portable gas balances, recording gas gravitometers, laboratory gas balances, meters and indicators, recording and indicating liquid gravitometers, and viscosimeters.

American Recording Chart Co. is also the exclusive distributor for the Macnick Chart Clock.

## A. K. Hegeman Represents Clark Bros. Co. on Coast

Clark Bros. Co., Inc., Olean, N. Y., manufacturers of gas engines and engine-driven compressors, have announced a change in address of their Pacific Coast office and warehouse and the appointment of A. K. Hegeman as West Coast manager.

The company's new sales office and warehouse are located at the plant of the Pacific Pump Works, Bicket St. and Slauson Ave., Huntington Park, Calif. A service department is maintained, carrying a complete stock of repairs, with Art Rowe in charge.

# DEARBORN Gas Heaters

—17 attractive models  
and every one bears the

A. G. A.

SEAL OF APPROVAL  
for Use with L.P.G.

EXTRA QUALITY  
EXTRA VALUE  
EXTRA FEATURES  
EXTRA SALES  
EXTRA SATISFACTION

Write for **FREE** Catalog

**DEARBORN STOVE CO.**

Los Angeles

Chicago

# Sell Speed

with a

# SPARTAN

A water heater built for today's requirements: speed in recovery (55.9 gallons per hour)—efficient—noiseless—attractive—safe. Every dealer needs the SPARTAN to make his line complete. Write for details.

A.G.A.  
Approved



**Continental**  
WATER HEATER CO. LTD

SPARTAN  
Automatic  
Storage

1637 N. Spring St., Los Angeles



# ON THE SPOT!

The aviation boys are not the only ones with a backlog of orders—our salesmen have a few too—many from customers of long standing.

And they all demand that your orders be filled—Right Now!—First! and with no cuts either!

You should see them storm at our production manager and hear them talk up your side of the argument on deliveries.

Everyone of them a champion for your cause.

To hear them—Why! you'd be just as proud of them as we are. And it's hard for us to take—especially when they cinch their arguments with the actual file records of your ten—fifteen—twenty and even twenty-five years of patronage—that's when it hurts! But they still pour it on.

They're on the spot too! Priority specifications of our Government Defense Orders and the inability to secure sufficient quantities of essential materials, is an emergency condition out of our control and we ask your indulgence, your understanding and cooperation. Thanks! and rest assured that your rights on deliveries are in very good hands.

# AMERICAN

PIPE & STEEL CORPORATION

Manufacturers and Distributors

ALHAMBRA

CALIFORNIA

## **Petgas Co. Has Been Formed in Petoskey, Mich.**

A new liquefied petroleum gas company known as The Petgas Co. has been organized in Petoskey, Mich. Officers of the organization are: V. W. Packard, president and general manager; T. Chalmers Curtis, vice president and secretary, and C. Frederick Curtis, vice president and treasurer.

The Petoskey Gas Co., parent company of the firm, has recently spent \$25,000 on the extensive expansion program which includes a bottling plant, two carloads of gas cylinders and a new cab-over-engine truck for the Petgas Co. The gas will be brought to Petoskey by tank car and bottled at the local plant. From there



**R. C. Weis, of Weis Butane Co., Wheatley, Ark. (seated on car bumper), getting some information on priorities from George H. Schlatter, American Stove Co., North Little Rock, Ark.**

it will be delivered to the several dealers throughout the territory.

The gas will be distributed in Charlevoix, Mancelona, Rogers City, Boyne City, Alanson, Cheboygan, Gaylord, Alpena, and Mackinaw City. Distributors in Alanson will be Fairbairn & Sons; in Charlevoix, the Ingalls Appliance Co. and in Boyne City, the Boyne City Gas & Construction Co.

A metered system will be used in Boyne City, Charlevoix, and Cheboygan with the same rate offered as is charged local consumers of the gas in Petoskey. In other communities a "self-service" system will be used.

"Many residents, business concerns, and cottage owners throughout northern Michigan, not serviced by our gas mains, have expressed a desire to use gas for cooking, water heating, and refrigeration. Petgas will afford them this opportunity," said Mr. Packard.

## **Two Indiana Firms Are Named As Philgas Distributors**

Appointment of the Guttman Furniture Co. and The Trading Post, both of Connersville, Ind., as authorized Philgas distributors in that community has been announced by the Verkamp Corp., of Cincinnati, according to news reports.

The Verkamp Corp., which started marketing the product in 1914, now serves the states of Indiana, Ohio and Kentucky.

## **Edgar Wright Plans Bottled Gas Service in Chadron, Neb.**

Edgar Wright, former manager of the City Gas Service, Chadron, Neb., has announced plans of establishing a bottled gas service in that vicinity. Mr. Wright is a graduate of the Chadron State Teachers' college and is well known in the community.

# Control

PROPANE-BUTANE  
CYLINDERS

THIS POSITIVE WAY—

## KEROTEST PROPANE- BUTANE

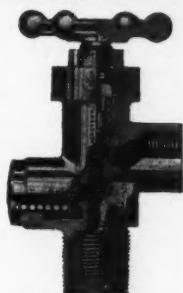
CYLINDER VALVES are:

- **DIAPHRAGM PACKLESS**—require least maintenance.
- **SAFE**—automatic safety-vent releases only excess pressures.

Write for Catalog

**KEROTEST**

KEROTEST MANUFACTURING COMPANY  
PITTSBURGH PA



# Only UTILITY Has it!

The UTILITY ALL-WEATHER Butane System contains new and outstanding features not available on any other system. Guaranteed to operate satisfactorily in extremely cold climates without artificial heat exchange. It **WILL NOT FREEZE**. Reduces service calls . . . Saves up to 25% on initial cost . . . Increases profits for you!

**BUTANE EQUIPMENT CO., INC.**

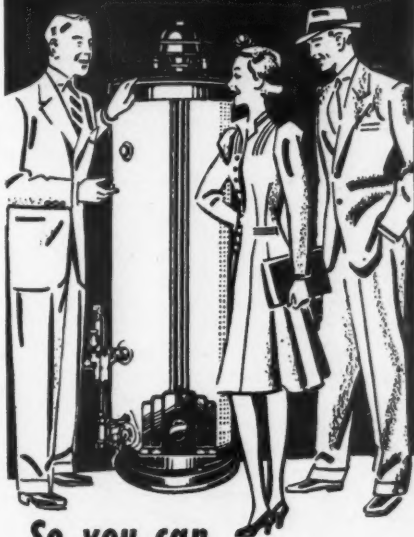
DALLAS, TEXAS

Phone Harwood 2146

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# HOTSTREAM

guarantees PERFORMANCE



**So you can  
guarantee CUSTOMER  
SATISFACTION • • •**

Your customers are entitled to all the conveniences Bottled Gas can afford. Hotstream Hot Water Service will build customer good will for your product.

There are Hotstream Heaters specially designed for safe, economical operation with Butane and Propane—in every size, for every requirement. Guaranteed 5 to 20 years.

For complete information, prices and catalog, write to Hotstream or, in the South, to these representatives:

L. M. TAYLOR, 3200 Main St., Dallas, Texas  
W. G. BAKER  
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R. O. FOARD, JR., 205 Walton Bld., Atlanta, Ga.

**THE HOTSTREAM  
HEATER COMPANY**

8007 Grand Avenue • Cleveland, Ohio

OCTOBER-1941

115

## Oceanside, Calif., Dealer Sells To Homes and Tractor Owners

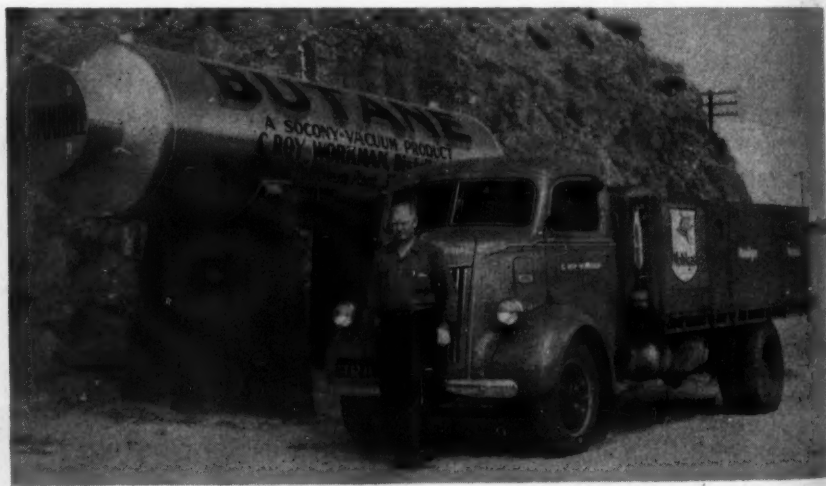
Among Pacific Coast marketers who tell of marked gains in sale and distribution of butane is C. Roy Workman, wholesale agent for General Petroleum Corp. at Oceanside, Calif., who has been distributing butane gas for the past two years. Starting from scratch in this particular field, Mr. Workman now reports he has more than 400 butane customers, all of whom have become boosters for him. New customers are being added at the rate of 18 per month.

Near Oceanside, on the main Los Angeles - San Diego highway, Mr. Workman has installed a butane storage tank of 3500 gals. capacity, from which he hauls his product with three trucks. These trucks are fueled with butane and equipped with the Roadmaster butane carburetor. In butane deliveries the trucks cover about 2000 miles per month, and to date with no delay for repairs or adjustments, he reports. The territory covered in

the delivery of butane gas is about 300 square miles, and embraces such well known places as Oceanside, Vista, Encinitas, Cardiff, Rancho Santa Fe and Solano Beach.

The butane marketed by Mr. Workman is principally used for domestic heating, but also on his list of customers are many who employ it for motor operation, including Charles Hausladen, of Vista, who fuels three Allis-Chalmers tractors with this product, and who reports a 50% reduction in the cost of operation since changing over from gasoline. Like many others, Mr. Hausladen's upkeep in tractor operation with butane is exceptionally low, due to lack of carbon formation and lack of crankcase dilution.

Because of the growth in butane sales, Mr. Workman recently purchased a new cab-over-engine truck, which he has equipped with the Roadmaster butane carburetor. The photo on this page shows this marketer standing by his new truck, parked alongside his butane storage tanks.



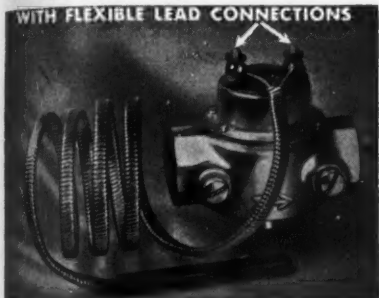
C. Roy Workman's new butane-burning truck at Oceanside, Calif.



## AUTOMATIC GAS SHUT-OFF CONTROL Thermocouple Type

General Controls Thermovalve MR-2

WITH FLEXIBLE LEAD CONNECTIONS



### 100% Positive Shut-Off for Water Heaters Floor Furnaces, Etc.

Pilot flame applied to thermocouple element provides all necessary current for valve operation. Valve is of manual reset, straight-through gas type, automatically closing upon pilot flame failure. Standard thermocouple length 30". Valve sizes  $\frac{3}{8}$ " to  $1\frac{1}{2}$ ".

Write for 1941 Complete Catalog

**GENERAL**  
450 E. Ohio St.  
Chicago, Ill.



**CONTROLS**  
267 5th Avenue  
New York City



## A Sign To You

—of quality, economy, efficiency!  
Algas Butane Carburetion, with the exclusive Multi-Jet feature, tops the field—the perfect unit for modern engines. Recommended for all internal combustion engines.

Write for literature today!

**American Liquid Gas Corp.**

LOS ANGELES

CHICAGO

who sell "PACIFIC" Gas Heating Appliances have a big "edge" on competition! They're "sittin' pretty" with a COMPLETE line of Console Heaters, Floor Furnaces, Gas Steam Radiators, Wall Heaters, Forced-Air Furnaces, Water Heaters . . . appliances of highest efficiency, eye-appeal and dollar value. Write today for free Literature and the "PACIFIC" DEALER SET-UP. Dept. BPN-10.



## **Newman Co., Plainview, Texas, Installs Butane Bulk Station**

The Newman Motor Co., Plainview, Texas, has installed a butane bulk station on the lot across the street from their present place of business at 220 W. Sixth St., according to Joe Newman, of the company.

The butane tank will have a capacity of approximately 5000 gals. and the company will act as jobbers for butane dealers in the territory.



## **F. C. Bilyeu and R. Bradley Will Erect Fort Scott, Kan., Plant**

Land has been leased and a 10,000-gal. storage tank for butane gas will soon be located on the Missouri Pacific right-of-way just west of Fort Scott, Kan., city limits.

F. C. Bilyeu and R. Bradley, mem-



For 41 years President James Mitchell has served the Cleveland Co-Operative Stove Co., Cleveland, Ohio, and the occasion was celebrated in conjunction with the 75th anniversary of the "Grand" range. President Mitchell (left) is shown receiving a bronze plaque from Sales Manager David L. Edelmuth.

bers of the Butane Equipment Co., already have over 500 customers using gas from high pressure outside bottle-type tanks and underground tanks.

The company store carries a full line of gas appliances, including cooking stoves, gas steam radiators, floor furnaces, automatic hot water heaters, lights and other appliances.



## **I. L. Youmans Installs Gas For Government Projects**

I. L. Youmans, Skelgas sales and service dealer in Champaign and Piatt counties (Illinois), has reported receiving a contract for Skelgas installations in 300 homes at the Government housing project at Rantoul.

The homes are all equipped with Skelgas ranges and automatic water heaters. The initial installation of 602 100-lb. cylinders of gas was made by the St. Joseph, Ill., branch of the firm recently. Future deliveries to the homes will be made from the Chicago bottling plant of the Skelly Oil Co. This is believed by Mr. Youmans to be the largest single order ever received by the Skelgas Co. for domestic consumption.



## **Altaville, Calif., Distributor Buys 500-Gal. Spherical Tank**

C. A. Simmondet, LP-Gas dealer of the Mother Lode district at Altaville, Calif., recently placed his new butane delivery truck in service. It has a spherical tank of 500-gals. capacity and is equipped with pump and meter for the dispensing of gas at customer's tanks.

The spherical tank, Smith Precision pump, and Smith meter was assembled on the truck at the Los Angeles plant of the L. C. Roney company. The tank is mounted next to the cab while the rear of the truck body is used for a compartment where appliances and cylinders can be hauled.



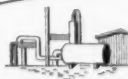
#### VIBRATION TEST

DOUBLE SEALS and copper pipe were subjected to 1000 impulses per minute in effort to shake them loose from their bulldog grip on pipe. Kerosene found no leak during or after this 30 hour test. DOUBLE SEALS are approved by Underwriters' Laboratories for L-P Gas piping. Write for catalog.

**HAYS MFG. CO., Erie, Pa.**

Whatever the Need  
Whatever the Problem

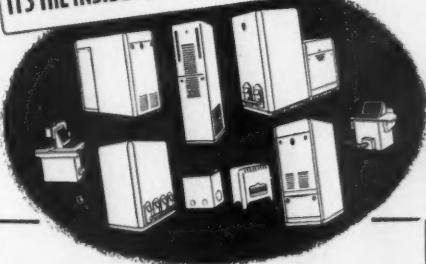
"WRITE RONEY"



LARGEST AND MOST EXPERIENCED  
MANUFACTURING ENGINEERS AND  
JOBBER OF L. P. G. EQUIPMENT

**L.E. RONEY INC.**  
140-34 W 59<sup>th</sup> ST. • LOS ANGELES, CALIF.

*and remember*  
**IT'S THE INSIDE OF THE FURNACE THAT COUNTS**



## DESIGN • MATERIALS CONSTRUCTION Make Selling Easier

### Note these features:

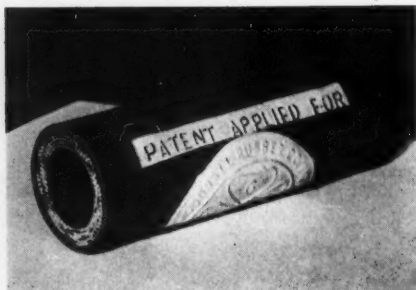
Long flue travel . . . Secondary Radiation . . . 2½ times greater air heating surfaces . . . patented Fraser heat trap . . . Air-tight, electrically welded fire-box of Armeo Ingot, Rust Resisting Iron . . . Full floating, corrugate 1, ins'd: insulator . . . Rubber mounted blower assembly . . . Fully wired controls . . . No "whip"—No "noise" pulley and fan . . . Balanced intake — no burned-out air.

These and other Fraser improvements make selling easier — customer satisfaction greater. It pays to push Fraser.

Send for illustrated data sheets.

**FRASER**

H. B. BASFORD CO. GAS HEATING EQUIPMENT  
DISTRIBUTORS  
SAN FRANCISCO • LOS ANGELES  
FRASER FURNACE CO.  
MANUFACTURED  
STOCKTON • CALIFORNIA



# GOODALL

## Stands for SAFETY in BUTANE-PROPANE HOSE

### "SENTINEL" Brand

Goodalls' special development for handling L-P Gas. Extra strong duck construction. Durable red rubber cover. Tube resists permeation. Light weight—flexible—SAFE! No wires except double static strand. Sizes: 1/2" to 3", inclusive. Send coupon for details and prices.

**GOODALL RUBBER CO., INC.**  
**PHILADELPHIA, PA.**

NEW YORK • BOSTON • PITTSBURGH  
CHICAGO • HOUSTON • LOS ANGELES  
SAN FRANCISCO • SEATTLE • SALT LAKE CITY  
MILLS: TRENTON, N. J. • ESTABLISHED 1873

Distributors' Stocks at Intermediate Points

**GOODALL RUBBER CO., INC.**  
4 South 36th St., Philadelphia, Pa.

Send complete information on  
"Sentinel" Brand L-P Gas Hose,  
and quote on.....ft.,.....size.

Name.....  
Company.....  
City and State.....



## Oklahoma Firm Takes Agency For "Algas" Carburetors

The American Butane Gas Co., Oklahoma City, Okla., has acquired the wholesale distribution and retail sales rights for Algas carburetors in the Oklahoma territory which it serves. This equipment is made by the American Liquid Gas Corp., Los Angeles.

J. L. Grigsby, president, announces that the line of carburetors will include all types adapted for equipping trucks, tractors, oil field equipment and stationary engines, for utilization of butane and propane gas. He states that a sales representative has been employed for the new carburetor equipment. His company will not maintain an installation department but will supervise the installation of the equipment in any shop chosen by the customer.

The company also is replacing the 100-lb. pressure, 1000-gal. tanks, on three of its delivery and transport trucks with 200-lb. pressure, 1000-gal. ones for the purpose of converting this equipment for the delivery of propane gas. The old tanks will be used as skid-tanks for use with oil drilling rigs, Mr. Grigsby says.



## C. H. Malone Is Appliance Salesman For Paris, Texas Firm

C. H. Malone has rejoined the Rodgers-Wade Furniture Co., Paris, Texas, as a salesman in the appliance department, according to Ira Lynch, manager of the department.

Mr. Malone was formerly connected with this department, and returns after spending a year with the sales department of another organization. Mr. Lynch recently announced the addition of the line of Hydro-Gas butane systems to the full line of appliances sold by the company.

- **BEST L.P.G. PRODUCTS**
- **DEPENDABLE SERVICE**

*Distributors for*  
**Bastian-Blessing Co.**  
**L. C. Roney, Inc.**  
**Hackney I.C.C. Cylinders**

**GAS EQUIPMENT CO., INC.**

2620 So. Ervay St., Dallas, Texas

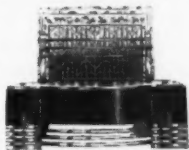
**GAS EQUIPMENT SUPPLY CO.**

1157 W. Peachtree St., Atlanta, Ga.

**Build HEATING PROFITS**  
**WITH**

**HUMPHREY**  
**RADIANTFIRES**

There is no better way to speed up your load - building program than a campaign on these modern, inexpensive home heaters. Send now for the new, free 1941-42 Humphrey Sales Help Portfolio. It gives you complete plans for selling the beautiful new 400 Series Radiantfires and other Humphrey gas equipment.



**GENERAL GAS LIGHT CO.**  
 KALAMAZOO, MICHIGAN

## **VULCAN PRE-PLANNED KITCHEN LAYOUTS**

*of special interest  
 to winter resorts*



*Vulcan Cooking Unit SR*

It's time to check up the winter resorts and replace obsolete equipment with new, efficient Vulcan co-ordinated cooking units.

The Vulcan catalog will help you plan efficient cooking layouts for hotels, restaurants, camps, etc. Includes many expertly-planned layouts to fit your prospects' cooking needs. Selling is easy, ordering easier, customer satisfaction is assured.

*Get a copy of Catalog BN 10.  
 Just write your name and address on the margin of this page, tear out the advertisement and mail to*

# **STANDARD**

**GAS EQUIPMENT CORPORATION**

18 East 41st Street, New York

Boston, Philadelphia, Baltimore, Chicago,  
 Aurora, Ill., New Orleans, Los Angeles

# ANSWERS

## To Chapter 4

### The Bottled Gas Manual

Here are the answers to the questions on Page 60 and which refer to problems in Chapter 4 of THE BOTTLED GAS MANUAL:

1. Pressure relief valve, fusible plug, or both.
2. To avoid their going hydrostatic.
3. The rapidity with which heat for vaporization can be transferred to the liquid propane.
4. A. The heat level of the atmosphere above the boiling point of propane.  
B. The presence or absence of motion in the atmosphere.  
C. The area of cylinder surface in contact with the liquid propane per sq. ft. of cylinder surface in contact with it, per unit of time, per degree of temperature differential.  
D. The rate at which the cylinder can transmit heat to the liquid propane.
5. Consult the "Vaporization in Still Air at Night Chart" (Table 13). As you wish to empty the bottles, you should take the lowest filled height listed, which is 5 in. At  $-8.1^{\circ}$  F. with a 5 in. filled height, a cylinder may be expected to vaporize 1.13 lbs. of liquid propane per hour.  $\frac{5}{1.13} = 4.5$  plus bottles—so we would have to install 5 bottles on each side of the regulator.
6. Consult the "Pounds of Liquid Propane Contained in Standard 100-lb. Cylinder Chart" (Table 12). It would contain 35.60 lbs.

$$7. \frac{20,000}{550} = 36.3$$

$$212 - 36.3 = 175.7^{\circ} \text{ F.}$$

8. It is the point at which a combination of pressure and temperature causes the liquid propane to cease vaporizing within a closed container.

9. 90 plus 48.1 = 138.1 degrees temperature differential.

$$(12) (138.1) (2) = 3314.4 \text{ B.t.u.}$$

$$10. \frac{3314.4}{192.6} = 17.2 \text{ plus lbs.}$$



### Pacific Coast Section Fall Meet To Be Held In Portland

The 1941 Fall Conference, Pacific Coast Section, Liquefied Petroleum Gas Association, will be held October 24-25 in the Multnomah hotel, Portland, Ore., according to the announcement of Charles E. McCartney, Section Chairman.

C. A. Marsh and Carl W. Hopp, who are in charge of programming the event, state that a fine series of papers is being arranged. Tentatively, these include "Liquid Gas Flame Cutting" by Gene Rowe, formerly of Standard Oil Co. of Calif.; "Relationship Between the Distributor and the Utility" by Major Erik Nelson; "How Liquefied Petroleum Gas can Serve National Defense," by Tallent H. Ransome, Ransome Co.; "Carburization of Liquefied Petroleum Gases" by Harold W. Smith, American Liquid Gas Co., and "Physical Properties of Liquefied Petroleum Gases," a platform-demonstration paper by Max Anfenger and Dr. O. W. Johnson, Standard Oil Co. of Calif. A banquet and stag show will also be featured. There will be no equipment exhibits.

This will be the first Coast-wide event to be held in the Pacific Northwest. For details, write John H. Kunzel, 210 West 7th St., Los Angeles.



Distributors and  
Industrial Users

Requiring

## Butane-Propane

Protect your peak demand by using our guaranteed supply agreement. We deliver wholesale lots only, scheduled to perfectly fit your fluctuating needs.

### Clute Petroleum Company

National Bank of Tulsa Bldg.  
Tulsa, Okla.

## Profit Building LPG HEATERS

LPG Dealers find real profit in **BRILLIANT FIRE** sales because the product is time-tested, trustworthy. Geared for economy operation and negligible servicing. These popular heat-makers are offered in a variety of styles for every home need.

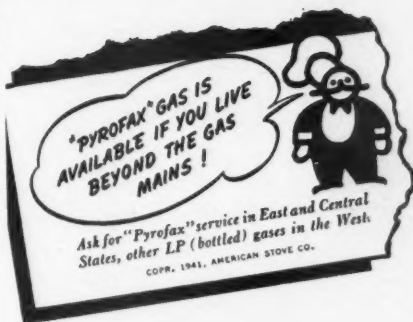
Write for Catalog



## Brilliant Fire GAS HEATERS

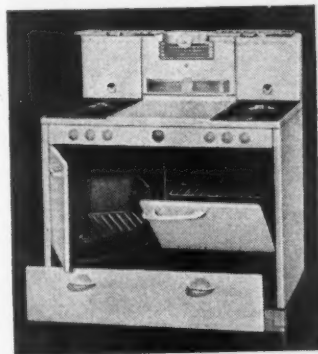
THE OHIO FOUNDRY & MANUFACTURING CO.

QUALITY HEATING EQUIPMENT SINCE 1900  
STUEBENVILLE, OHIO



## HERE'S A REAL NATIONAL AD FOR YOU

THIS "spot" is part of our 38 million Magic Chef advertising messages this fall, in Good Housekeeping, Ladies' Home Journal, Saturday Evening Post, Woman's Home Companion, American Home and Better Homes and Gardens.



The Magic Chef "All-American" is our nationally advertised leader. And, like all Magic Chefs, designed especially for use with LP-Gas. Franchise still open in some areas. Write now for details.

AMERICAN STOVE CO.

4301 Perkins Ave. Cleveland, Ohio

## Gray's Ice Co. Installs Butane Plant in Lodi, Calif.

Gray's Ice Co., Lodi, Calif., recently installed a 4000-gal. LP-Gas tank just outside the city limits on their Terminus highway property, where they are building a new plant to adequately take care of their business in the Lodi district.

The new tank represents an investment of \$2500 and is equipped with the latest type pump and equipment. Dave Gray is manager and owner of the company.

## Martin Olson and Son Take Over LP-Gas in Milica, Minn.

Martin Olson and Son, Milica, Minn., have purchased the bottled gas business formerly handled by the Anderson Hardware in that city. Equipment includes a supply of gas stoves,

drums, and appliances. The customer list of 350 names will be supplied, as formerly, with either "Home Gas" or "Blaugas," distributed from Minneapolis and St. Paul.

Future plans of the new company are to build a gas bottling plant in Milica to facilitate service to local customers.

## Praises Skelgas, Wins Prize Of \$75 Water Heater

Fred W. Hendricks, of Hendricks Brothers Co., Farmersville, Ill., was surprised recently to learn that he had won first place in a contest sponsored by Skelgas. He had almost forgotten about sending in a 25-word sentence telling why he liked Skelgas water heaters.

The reward amounts to \$3 per word for his efforts and was beyond his greatest anticipation.



No. 41-PD-8123-X (Illustrated)

Baking Oven.....	14 3/8" x 18" x 19 1/2"
Broiler.....	7 1/4" x 18" x 17"
Size of Cooking Top.....	9 1/4" x 18 3/4"
Height to Cooking Top.....	36"
Floor Space.....	36" x 26"
Shipping Weight, Approx.....	250 lbs.

# ATHENS STOVE WORKS, INC.

ATHENS, TENNESSEE

## VESTA LP-Gas Ranges

### New BEAUTY

Graceful lines and smart modern styling enhance the charm of any kitchen.

### New PERFORMANCE

Foods that are palatable and healthful are easily, quickly and economically prepared.

### New ECONOMY

Definite savings in fuel costs because cooking failures and food spoilage are eliminated.

### New CONVENIENCE

Designed, styled and built in a variety of models to suit every choice of arrangement.

## Superior FLARE FITTINGS

*Especially For*

**L. P. G. INSTALLATIONS**

SAE (Flare) Unions,  
Couplings, Adapt-  
ers, Elbows, Tees,  
Crosses and Nuts

Listed as Standard by  
**UNDERWRITERS  
LABORATORIES,  
INC.**



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**SUPERIOR VALVE & FITTINGS CO.**

1309 WEST LIBERTY AVENUE  
PITTSBURGH • PENNSYLVANIA

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**HEATERS and FLOOR FURNACES  
FOR LP GAS**

Every Model in this Complete Line is designed especially for LP Gases. All Models are finished in "Lifetime" Porcelain Enamel and fully approved by A.G.A.

A wide range of sizes provides a model for every heating need. Write us for literature, pictures and prices.

**TENNESSEE  
ENAMEL MFG.  
COMPANY**

Nashville,  
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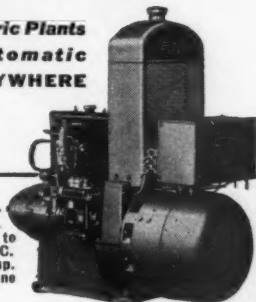


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## SALES OPPORTUNITY!

**Dealer Franchise Available!**

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supply automatic  
current ANYWHERE**



1500 watts—  
110-volt A.C.  
Others, 800 up to  
10,000 watts, A.C.  
or D.C. \$235 up.  
Operate on butane  
or propane.

**FULLY** automatic — self-starting, self-stopping — easily installed — sturdy, compact, quiet, efficient. Ample current for lights, pump, radio, small tools. In use at camps, on farms, ranches, on shipboard—at many points beyond regular power lines. Also essential for emergency service at hospitals, theaters, etc., when city current fails. Many styles, sizes, prices. *Investigate—*



**KOHLER OF KOHLER  
ELECTRIC PLANTS**

*Planned Plumbing and Heating*

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Plants and dealership.

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Address \_\_\_\_\_



With a Smith Butane-Propane Pump on the job, you know exactly what your results will be—dependable, economical performance under all operating conditions.

The **BALANCED GEAR** Design of Smith Pumps is especially adapted to the difficult Butane-Propane Service. These pumps eliminate dispensing troubles and shut-down delays, and the balanced gear design prevents the usual severe internal bearing friction and wear.

Don't Guess About Results—6 Smith models for every purpose—Direct Electric Drive; Truck Mounting.

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**BUTANE-PROPANE**  
**PUMPS**

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**BUTANE-PROPANE News**

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INDIANA

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### Quality Water Heaters

### MODELS IN ALL SIZES

Write for Our Catalog and Sales Handbook

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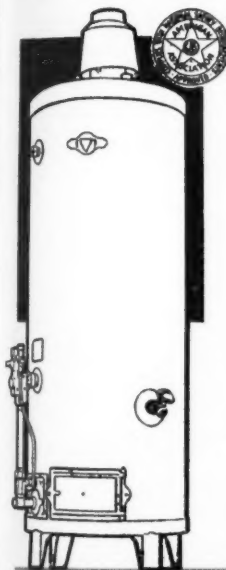


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*The Long-Life Line*

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Here are the three outstanding quality automatic gas water heaters that comprise the SECURITY LONG LIFE LINE! Over 36 years of manufacturing place the DE LUXE—the CHALLENGER and the CADET foremost in the Butane-Propane field! They are built in 20—30—and 40 gallon capacity—and are up-to-the-minute in performance and good looks!



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WATER HEATER**

**The CHALLENGER  
WATER HEATER**



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**Security Manufacturing Co.**  
Kansas City, Mo.

**The CADET  
WATER HEATER**



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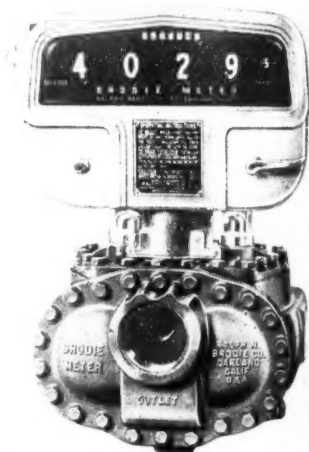
THE *Balanced*

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•  
ACCURACY  
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SIMPLICITY  
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DURABILITY

*all in  
proper  
balance*

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- ★ SIMPLIFIED LOW-COST SERVICING
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